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It is more than a coincidence that the used cars in which nonmetallic timing gears were original equipment command the better market.

NRA MEMBER U.S. WE DO OUR PART

830-134

GENERAL ELECTRIC

AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

Reg. U. S. Pat. Off.

NRA MEMBER U.S. WE DO OUR PART

Volume 69 — Number 18

JULIAN CHASE, Directing Editor

DON BLANCHARD, Editor
P. M. HELDT, Engineering Editor — JEROME H. FARRIS, Ass't Editor
JOSEPH GESCHELIN, Eng. Editor — ATHEL F. DENHAM, Field Editor
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AUTOMOTIVE INDUSTRIES

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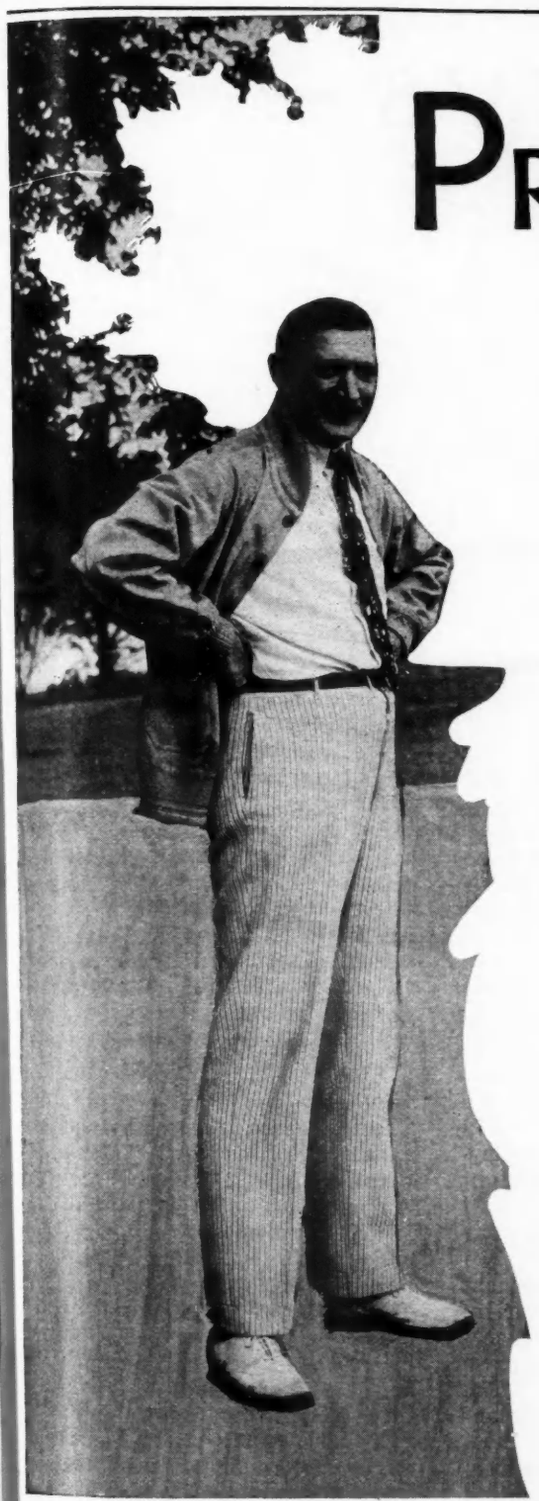
PRODUCTION PROBLEMS UNDER THE CODES



Mr. Knudsen became associated with the General Motors Corporation in 1922 shortly after he resigned from the Ford Motor Company. In 1924 he was elected President and General Manager of the Chevrolet Motor Company and during his regime that company became the largest producers of automobiles in the world. Mr. Knudsen in his new position as executive vice-president has among other duties, general supervision over all car and body manufacturing operations for General Motors Corporation in the United States and Canada.

by W. S. Knudsen

Executive Vice-President, General Motors Corporation

AS difficult of solution as are some of the complex problems which were brought into the limelight by the adoption of the National Industrial Recovery Act and the subsequent formulation and putting into effect of various automotive manufacturing codes, none of them fundamentally represents a radical departure from the problems confronting the production executive during recent years.

Various provisions of the codes have served mainly to emphasize the relative importance of certain tasks rather than to introduce completely new elements. The activities of the production executive have been changed quantitatively rather than qualitatively.

Production costs inevitably will be increased—how much it is too early to tell since no automotive manufacturer has as yet had sufficient experience in operating under the code to arrive at definite conclusions. However, from what we can see at the present time an increase in volume of approximately 25 per cent at least will be necessary during 1934 as compared with

W. S. Knudsen Says—

It is absurd to believe that production can be increased and quality maintained during peak seasons merely by speeding up machines and conveyors

Increased sales will contribute definitely to material changes in production methods and the adoption of new types of production equipment

Without an increase in car prices, an increase of approximately 25% in production volume will be necessary to offset increased costs under code operations

Stabilization of parts and even car production on a more nearly uniform month to month basis will be one of the major problems of production men of 1934

the current year to offset projected increases in over-all cost of production, assuming prices of our finished products as remaining unchanged.

Perhaps the major problem faced by the production divisions of the automotive industry during 1934 is the stabilization of parts production and car production as well on a more even month to month basis. This again is not a new problem but recent developments have served to emphasize the necessity of eliminating abrupt peaks and valleys in pay-roll charts. Some efforts have already been made in this direction.

Here at Chevrolet during the past three years we have been able to maintain an average employment for eleven months out of each year varying not more than ten per cent from an average of 32,500 men. Under the NRA code approximately 15,000 men have been added to our pay roll as averaged over three years, bringing the total as of Sept. 30, to approximately 47,500 men. With increasing employment considerable time and thought will be given by the industry, I believe, to stabilization of parts production.

Naturally such a development will of necessity involve higher inventories during slack selling seasons, involving in itself an increase in over-all production costs. The more equitable distribution of man-hours throughout the year, however, warrants its serious consideration. Stabilization of production will also involve a steadier flow of materials from suppliers enabling a reduction in their peaks and valleys of employment and production also. Hand to mouth buying will be materially reduced as a result. Increasedly scientific production planning is of course, a necessary corollary.

Stabilization of parts production inevitably would have a salutary effect on quality, especially with so-called mass producers. "Mass production" in itself means nothing. Anyone with sufficient capital can, if he is so disposed, buy materials and machinery and hire enough men to become a mass producer. The idea however, that you can increase production in peak seasons by merely speeding up machines and conveyors—and at the same time maintain quality—is silly.

As to lowering production costs, the conditions under which we are operating in accordance with the provisions of the NRA automobile code tend to emphasize the necessity of such reductions. Fortunately no limitations have been or can be placed on brains and the ability of men to think out, plan, and initiate new production methods that will enable them to make the most of existing conditions. There has cer-

Stabilization of production will result in a steadier flow of materials from suppliers and a definite reduction in hand to mouth buying

The codes have, fortunately, placed no limitation on the ability of production men to think, to plan and to initiate new methods which will enable them to make the most of existing conditions

Stabilization of parts production will result in higher inventories during slack selling periods with a consequent increase in over-all production costs

New methods and new equipment will be needed to get projected new engineering designs into production

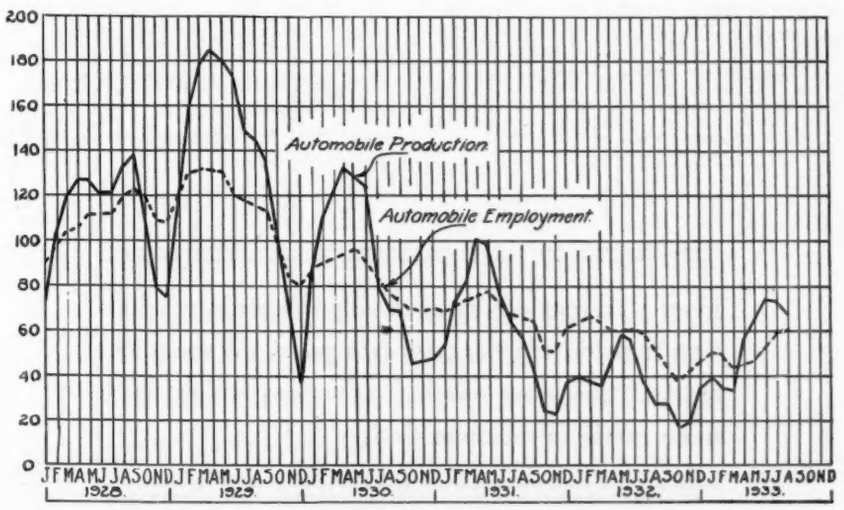
tainly been no restriction under the code of the influences which determine the purchases of new equipment. Obviously, any production man will recommend the purchase of new equipment whenever it can be used to advantage. Such purchases are of course contingent upon volume. Increased sales in 1934 definitely will result in material changes in production methods and the adoption of new types of production equipment wherever the increased volume indicates such changes as desirable.

Furthermore, projected new engineering designs will necessitate the development of both new methods and new equipment to get such designs into production. In this respect, particularly, machine tool producers will continue to find that brains and initiative will create a market for their products wherever the user can be shown either a better method of achieving the same result or, on the other hand, a means of lowering production costs.

As long as Government policy embraces labor conditions, labor relations will, of course, form a more important part of the production executive's routine daily work. Again this is a quantitative rather than qualitative change however. Serious production executives in this industry have long ago realized that keeping good men steadily employed and happy and teaching them to think and cooperate is the only road to mass quality, the fundamental on which this industry has based its development and growth.

Why Further Regularization of Automotive Employment is Needed

Automotive employment has followed the peaks and valleys of automotive production during the past six years. Regularization of employment or at least a flattening of the peaks and valleys of the curve of employment, is a big problem for the future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Most "Modernizing" Doesn't Make

Old machine tools rebuilt are usually that and nothing more

MANY prominent automotive executives and engineers were perturbed and perhaps we might even say distressed, when Lieut. Colonel Brainerd Taylor stated at the International Automotive Engineering Congress that in the U. S. Army shops at Holabird they have spent $2500 per vehicle to "modernize" the old wartime Class B trucks. The questions uppermost in the minds of the shocked executives and engineers were undoubtedly: "Is such a program justifiable? It is economical?"

Perhaps they were right in questioning the wisdom of a policy of this kind, but something quite analogous has apparently been a part of the equipment policies of a great many automotive manufacturers for some time past.

Arbitrary executive decisions leading to proceedings similar to the so-called modernizing of the Class B trucks unfortunately have not been uncommon during the past few years. This was brought out, we hope, in no unmistakable fashion in the paper which we read at the International Automotive Engineering Congress[1] in which the plea was made for a better understanding of the factory problems by the higher executives of the company. Unless there is a keener appreciation of the problems of the factory, particularly as they relate to its equipment needs, the company will suddenly find itself saddled with old, inefficient equipment totally incapable of the cost-reducing possibilities so essential to cope with present - day needs. Moreover, it may be found that a great deal of "modernization" has taken place in which considerable sums of money have been spent in an effort to make new machines out of old. In the final analysis this policy may be found woefully inefficient because it is practically impossible to equip an old machine with enough new features so that it may compete with any great degree of success with machine tools of current vintage.

In the course of rather extensive traveling here and there about the country recently, we had occasion to look around many machine tool manufacturing plants. On these visits we were invariably shown some old, decrepit machines upwards of ten years of age which had been returned for overhauling and "modernization" by various well-known automotive manufacturers. Upon inquiry in one of these shops we were rather amazed to learn that the ultimate cost of overhauling such machines would run very close to 75 per cent of the cost of machines in current production.

Now the question that arises immediately is, "Does it pay under any circumstances to spend anywhere near 75 per cent of the cost of a new cost-reducing machine tool in an effort to modernize a ten-year old machine, particularly when it is realized that this expenditure can't possibly provide all the features of new equipment?"

Factory executives realize very keenly that the recent changes in the labor situation brought about by the NRA, and in fact the whole complexion of the competitive situation in the automotive industry, have made exacting demands upon the production department which can be met only through the use of cost-reducing methods of a high order. But further cost reduction is well nigh an impossible task without the aid of the processes and equipment so revolutionized by the activity of machine tool builders in recent years. Consider that back in 1929 at the last Machine Tool Congress, factory executives saw equipment which definitely placed the seal of oblivion on the machine tools which were then in use in mass production. Only a cursory examination of the developments since that time, as they have been recorded in the pages of *Automotive Industries*, will show how much further we have gone through the unceasing effort of mechanical genius not only in the automotive plants but in the ranks of the machinery builders.

Here's an example of so-called modernization on a grand scale. We have used altered figures for more or less obvious reasons but have not changed them relatively. It is the case of a parts maker who returned a battery of, let us say, 40 milling machines to be completely overhauled and fitted with some of

[1] "Executive-Factory Liaision Clears Moot Points in Equipment Buying," by Joseph Geschelin, read before the International Automotive Engineering Congress, Chicago on August 28.

Even a cursory survey of developments in production tools during the past two years will show the marked and now needed advances which have been made in machine design.

New Machine Tools Out of Old

Present-day demands upon the production department call for cost-reducing equipment of the highest order

by Joseph Geschelin
Engineering Editor, Automotive Industries

the current improvements. According to the contract, the cost of doing this work will be $750 per machine or an expenditure of $30,000 for all 40 machines. The machines also are to be fitted for individual drive entailing an additional outlay of $50 per machine for the motor and electrical equipment bringing the grand total to $32,000.

Remember that when the machines are rebuilt you will still have a battery of 40 machines. Suppose now, for the sake of argument, and the assumption is well based on fact, that similar machines in current production are capable of so much more productivity that a battery of only 20 or 25 machines could turn out the same volume of product in the same number of working hours. It is entirely possible that the cost of the smaller battery of new machines might entail an expenditure of not much more than the $32,000 which is to be expended for overhauling.

If we analyze the situation carefully we find that the first advantage of buying rather than rebuilding in this case lies in the cost-reducing possibilities of a relatively smaller number of machines with less attendants, yet turning out the same volume of product. The next advantage arises from the fact that the smaller battery releases much needed floor space which can be utilized either for additional machines, if productivity warrants, or by the cumulative effect of such changes in a number of departments may release enough floor space to provide room for a new department. Moreover, the new arrangement results in greater compactness thereby reducing the path from the raw material to the finished product and, by the same token, cuts the cost of materials handling through the department.

Illustrations could be multiplied to provide a lot of food for thought in times when it is so important for everyone to get his money's worth out of every dollar spent out of cash reserves. Factory executives are fully aware of these facts and obviously have not been over-enthusiastic in entering into rebuilding and "modernizing" programs. Unfortunately there has been no way out for them except to obey the orders from above.

In the light of the facts it would seem to be quite profitable for the general executives of the company to investigate the factory side of the picture. And, if the factory were given a freer hand in the investment of appropriations for production equipment, it could certainly make the equipment fund yield dividends. The existing state of affairs is an eloquent plea for closer cooperation between the company executives and the factory.

And speaking of the desire for "modernization," free hands for factory men and the closer cooperation of company executives, there is a true story which is worth telling even if it be only for its entertainment value. In a certain shop —it was a railroad shop— orders had been given down the line not to buy new equipment although repairs and replacements within reason would be tolerated. One of the minor executives had felt keenly the need for a modern lathe in his department but had been unable to get the necessary funds, so, by a liberal interpretation of the blanket instructions he proceeded to replace parts of the lathe with new units until, eventually, he accumulated a new machine of modern design and completely junked the old one. No one was the wiser until inventory time when the accounting department suddenly discovered that they were unable to account for one of the old machines but, at the same time, a new machine appeared which had not been on the books previously. Came a searching investigation and the ultimate explanation which would have caused the dismissal of the offender were it not for the intervention of someone higher up who thought that a man smart enough to put over such a deal was too good to be let out. In this case real modernization was accomplished.

Generally speaking, "Modernization" can't provide the urgently needed increased efficiency offered by new equipment which often costs little if any more.

JUST AMONG OURSELVES

Cooperation, but No "Yessing"

OPEN antagonism between automotive employers and the National Labor Board has not developed, although last week saw some diplomatic skating over thin ice on the part of everyone concerned.

Having signed a code, automotive executives seem eager to live up to both the letter and the spirit of its terms in every particular. They seem equally eager to deal fairly and sincerely with their own employees where those employees, either individually or as a group, present grievances to the management.

There is no disposition on the part of the manufacturers, however, so far as we can discover, to say "Yes" to every demand that many be made, particularly when made by strikers who walked out without having presented any specific complaints to the individual managements.

* * *

Factories Will Not Bargain Collectively

UNLESS we are mistaken, automotive manufacturers in general will be found standing firmly for two things: (1) negotiations with labor must be between representatives of labor and individual automotive managements; (2) the principle that when a man goes on strike he gives up his job.

At the present writing it would appear that the National Labor Board is willing to grant the first of these contentions, but not the latter, having ruled that for purposes of negotiation men on strike shall be considered as employees of the company.

The latter point may never come to a show down so far as the automotive industry is concerned. If it does, there are some outside as well as inside the industry, who think that the ruling of the Labor Board cannot be upheld through the courts. Others are equally sure that the ruling would be upheld. Under certain circumstances, it is perfectly possible that somebody might try to find out in the only way the matter can finally be settled—by taking a test case to the courts.

* * *

Labor Troubles Promote Mechanization

FACED with the opportunity of a lifetime to get a better position in the industrial picture than ever before if capable of following constructive programs and leadership, labor can, by persisting long enough in the type of guerrilla warfare which has been going on in the last few months, fritter away all chance of serving its own best interests. The popular sympathy which has been labor's ever since the beginning of NRA eventually will be lost if small groups continue to impugn the motive of every move made by manufacturers and to harass every attempt to get production under way effectively to meet the unquestioned existing demand for automobiles.

The laws of economics are certain to work in the long run, NRA or no NRA. Nothing so rapidly stimulates increased mechanization of industry and reduction of man-power to a minimum as does continued inability to carry on production without unreasonable interruptions.

The striping machine now almost universally used in automotive paint shops sprang, we are told, from the desperation of a now-prominent production executive in whose paint shop petty strikes were constantly blocking the entire manufacturing program.

The way is open for labor to negotiate its grievances; employers are more willing than heretofore—under compulsion if you will—to listen to complaints and come to some reasonable agreement concerning them. NRA can be made the basis for a definite betterment of the condition of workers for all time; or the opportunities it provides can be lost by persistent shortsightedness.

NRA should be viewed as a new means for cooperate effort between employers and employees looking toward a better social system. Only the small-minded will conceive it merely as a new set of rules by which to wage an old battle.—N.G.S.

The 1933 PRODUCTION EQUIPMENT SHOW IN PRINT

NOTHING is more expressive of the courage and foresight of American business, its boundless enthusiasm and progressiveness, than the uninterrupted program of research and new model development which is being carried out by machine tool and equipment manufacturers. The automotive manufacturing industry owes a great debt to these organizations who, despite the downward trend of their sales curves during the past two years, have continued to plan and change in the advancement of the art of metal cutting and the reduction of costs in every phase of automotive production.

The following pages which bring to the readers of *Automotive Industries* the 1933 Production Equipment Show in Print, record the progress being made during the past year and particularly during the few months immediately preceding the publication of the Production and Factory Equipment issue. Here is to be found much of the labor-aiding, cost-reducing equipment and tooling so essential under the new conditions created by the NRA codes. Use this section to check up on your present facilities; consider it as a means for checking your ability to keep abreast of progressive competitors.

This Show Section presents the new developments that are ready for announcement as this issue goes to press. It is stimulating to know that there is much more activity along the same lines which probably will take concrete form and be ready for announcement later in the year. Some of these things that are coming we have already seen in the making. You will find the facts about them in *Automotive Industries* as these products become ready for their places in the automotive plants.—J. G.

Landis New Line of Ground Die Heads

The Landis Machine Co., Waynesboro, Pa., has developed a new series of threading die heads designed to supplement, but not to supersede, the present line. The new die heads are built in the following types and sizes: the ⅝ in. and ⅞ in. Lanco Heads (type V) for hand operated threading machines; the ⅝ in., ⅞ in., and 1¼ in. Landex Heads (type L) for automatic screw machines; and the ⅝ in., ⅞ in. and 1¼ in. Landmatic Heads (type H) for turret lathes. The heads are recommended by the manufacturer for high production or heavy duty service, or for work that must be held to extremely close thread limits.

In design, they represent a radical departure from the conventional Landis design. The chasers used in the Type V, L, or H heads are, however, the same as those used in the Lanco, Landex, or Landmatic Heads now in use and are interchangeable with these heads.

Chaser holders are mounted on the face of the head body and operate in dovetail slots which have an unusually wide bearing surface consisting of the combined areas of the base and the dovetail section of the chaser holders. The driving member of the die heads is attached directly to the head body in which the chaser holders are supported.

The head opening action is obtained by moving the chaser holders away from the work. The position of the chaser holders is controlled by prongs which are an integral part of the closing ring. The supporting surfaces of these prongs act as cams and, as a key in the chaser holder slot fits into a keyway in the prong, the action of the chaser holders, both to and from the "closed" or "locked" position, is positively controlled.

The movement of the closing ring is controlled by a locking ring. In closing the die head, the locking ring is rotated on the head body, and, through tapered surfaces, it forces the closing ring forward.

The opening and closing of the Lanco Head (type V) and the Landex Head (type L) is obtained through a yoke. The Landmatic head (type H) may be opened and closed either automatically or by hand. The automatic opening action is obtained merely by interrupting the forward movement of the die head onto the work.

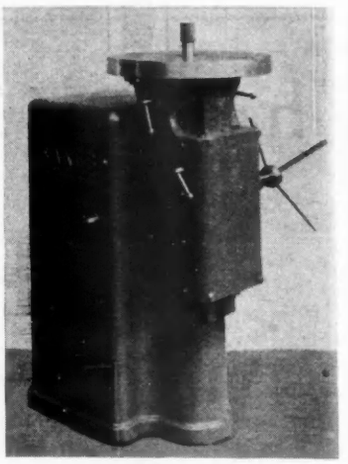
The mechanism for adjusting the die heads to size consists of a threaded collar which screws onto the head body and which is in direct contact with the locking ring. The adjusting ring is graduated and each division gives an adjustment of exactly .001 inch in the pitch diameter of the thread. The graduations are clearly marked and widely spaced so that adjustments as fine as .00025 inch are possible.

The chaser seat in the chaser holder is ground at an angle to the face of the die head. When the chaser is clamped in the chaser holder, it is inclined at an angle to the work. This practice of controlling the Relix angle in the chaser holder instead of in the chaser is said to have advantages such as simplifying the setting and grinding of the chasers, permitting chaser interchangeability, making possible the use of chasers of a given pitch for threading any diameter of work within the range of the die head, etc.

The die heads can be employed for cutting both right and left hand threads by using the proper chaser holders. The same chasers are used for right and left hand work by grinding the cutting angles at both ends of the chasers.

Adds Bigger Contour Grinder

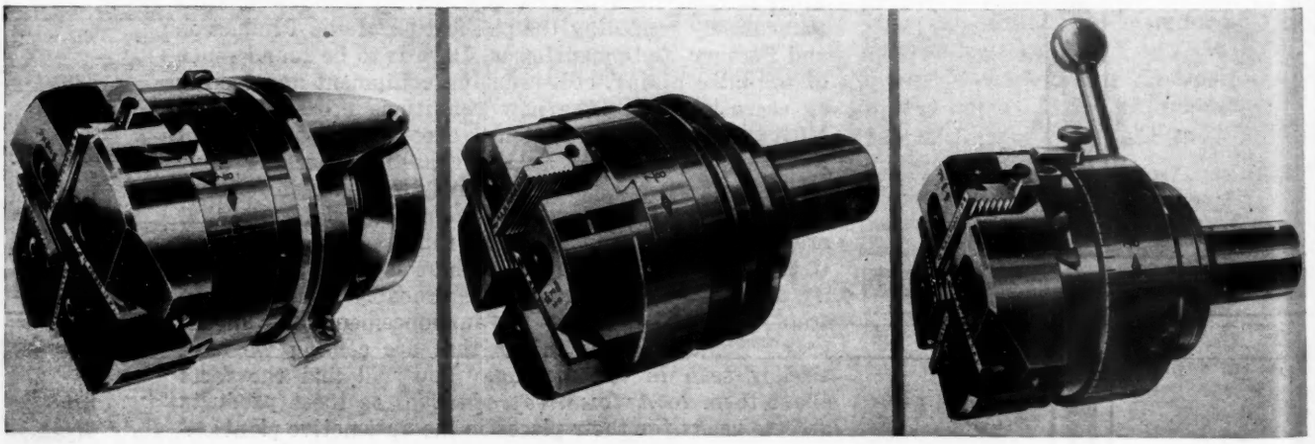
Baker Bros., Inc., Toledo, Ohio, has just added the No. 3 Contour Grinder to supplement the smaller machine recently announced in *Automotive Industries*. The new machine is particularly suited to the needs of die and tool shops for rapid and economical grinding and polishing of contours or irregular shapes.



Baker Bros. No. 3 Contour Grinder

It is arranged with a vertical spindle mounted on large precision antifriction bearings. The spindle is driven by a vee belt from a standard 1½ hp. 3600 r.p.m. motor mounted directly to the rear of the spindle assembly, and fully enclosed in the main column of the machine. Three changes of speed are provided from the belt drive. The entire spindle assembly has an up and down reciprocating action which is one of the main features of the machine and gives a much better grinding action from the wheels. This reciprocating action is actuated through means of a cam, driven through an auxiliary drive from the main motor. Provision is made for disengaging this reciprocation when dressing the wheels and using polishing drums for finishing operations.

The machine takes wheels from ½ to 4 in. in diameter and up to 3 in. face. It requires a floor space of 24 x 30 in. and weighs about 900 lb. Spindle speeds are: 3600, 5400, and 7200 r.p.m.

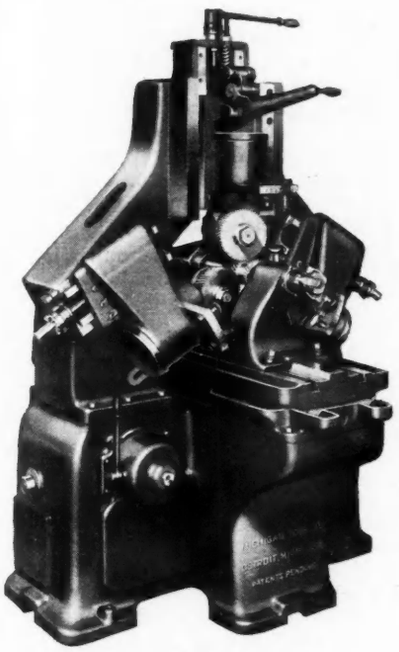


Landis line of Lanco, Landex and Landmatic die heads

Michigan Gear-Lapping Machine

Three laps are used in a gear-lapping machine recently designed by the Michigan Tool Co., Detroit, Mich. These laps are spaced about equally around the work. Each one may be set with its axis at an angle to the axis of the work, thereby producing a sliding action between the lap and gear teeth. The upper lap is raised and lowered by means of a handle for loading and unloading the machine.

A hydraulic brake on each lap-spindle may be set to almost any predetermined pressure for speeding up



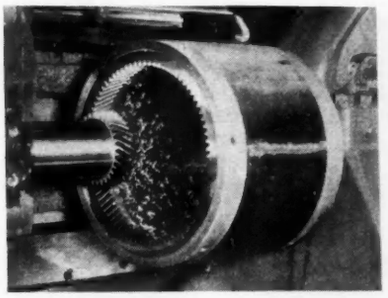
Michigan Tool Co. gear lapping machine

lapping operations. The headstock and tailstock for supporting the work, either between centers or stub arbors, are mounted on a table which is oscillated at various speeds. It is claimed that this insures even lapping throughout the full length of gear teeth. Reloading is facilitated by an 8-inch movement of the tailstock spindle.

The machine is almost entirely automatic. Means are provided in the control box for setting the length of time it is desired to lap each side of gear teeth. The time may be equal for each side, or different. The machine can be set to automatically change from lapping one side of the gear teeth to lapping the opposite side.

Gear Generator Cuts Internal Gears

Known for its ability to cut double helical gears without the use of a gash for tool run out, the Sykes gear generator made by Farrell-Birmingham Co., Buffalo, N. Y., has recently



Sykes gear generator made by Farrell-Birmingham

been adapted for cutting internal gears. Both spur and helical internal gears may be generated.

In performing this operation one of the two cutter heads ordinarily used is removed, a cutter spindle with longer extension is mounted in the other head and the timing of the tool relief is reversed. The capacity of the machine for internal gears is limited by the spline shaft that actuates the relieving mechanism. This may be increased by the use of a short shaft, the substitution of which takes no extra time since the spline shaft must be removed in any case when the timing of the relief is changed over.

When the standard shaft is used on the 2-B machine, as shown, the maximum rim thickness is 4¼ in., minus the cutter radius. By using the shorter shaft this limit is increased to 6½ in. minus the cutter radius. The minimum inside diameter of internal gear that may be cut equals the outside diameter of the cutter plus 2 in.

Another little known operation that may be performed in the Sykes generator is that of cutting two spur gears of different diameters in one operation. For certain cluster gears this practice may halve the cutting time.

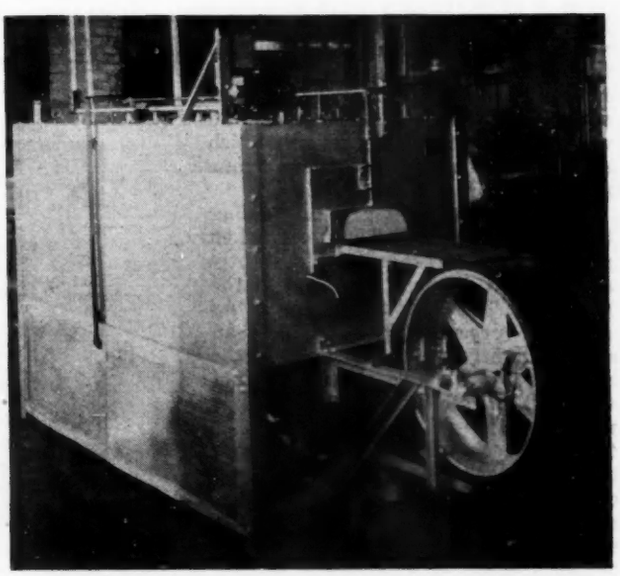
New Continuous Brazing Furnace

Recently The Electric Furnace Co., Salem, Ohio, has developed a very inexpensive gas atmosphere, together with the necessary furnace equipment, suitable for maintaining the required atmosphere and for the continuous brazing of such parts. It is now possible in many cases not only to economically replace many present joining methods, but also to cheapen the production of many parts which are now made in a single piece by making the parts in two or more pieces, followed by a continuous brazing operation.

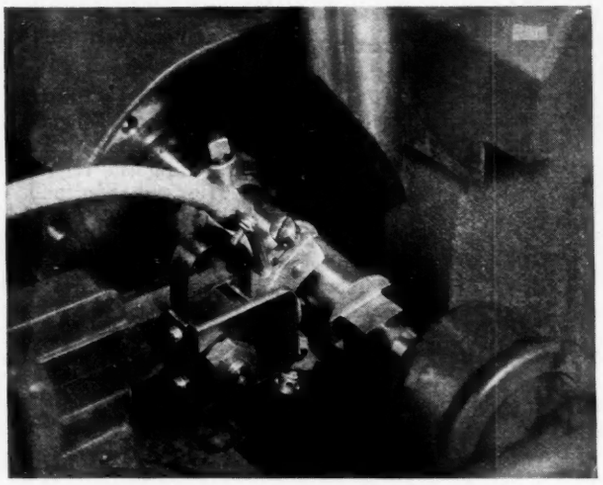
The joining of steel parts such as stampings, forgings and screw machine parts is accomplished by brazing in electric furnaces with controlled reducing gas atmosphere at temperatures usually ranging from 1400 deg. Fahr. to 2100 deg. Fahr.

The equipment in any case consists of a heating chamber in which the work is heated to the desired brazing temperature and a cooling chamber is attached to the heating chamber and through which the work passes after leaving the furnace proper. The cooling chamber is usually of double steel shell construction, the inner chamber being filled with the gas atmosphere, and water is circulated between the inner and outer shells as a means of forcing the cooling of the material to a satisfactory discharging temperature in the shortest possible time.

The scale-free heat treatment of many fully machined parts will also be a great gain to industry. The inexpensive gas now available for the protection of such parts while under heat treatment makes these operations exceedingly economical. Tests have been conducted over a very wide range of materials and in the future many additional installations probably will be made.



Brazing Furnace of the Electric Furnace Co.



Landis Automatic Universal Air Sizing Device

Good for Internal And External Sizing

A universal air-sizing device fully automatic in its action has been brought out by the Landis Tool Co., Waynesboro, Pa.

It is universal in application inasmuch as it may be used for both external and internal grinding operations of all kinds. External surfaces may be sized just as readily whether they be straight, tapered, radial, splined, key-wayed, or only half diameters. Internal surfaces may be straight, tapered, splined, key-wayed, interrupted or blind. The device also serves with equal efficiency for radial internal surfaces, making it ideal for raceway grinding.

It is fully automatic because no attention of any kind is required during operation. Through the medium of solenoids and hydraulic valves it may be made to control as many machine movements as necessary. It is consistently accurate because it will size well within limits of .00025 in. These limits may practically always be maintained.

Operation of the device is based on the principle that if air is escaping from a pressure line the pressure in this line is affected by the size and shape of the outlet through which it is escaping. This change in pressure is used to change the level of the mercury in a U-tube to close contacts and constitutes a mercury switch which controls feeds and other machine movements.

A typical external grinding sizing head is illustrated. The work when placed between centers rests lightly against two diamond points with the air outlet between the points. As grinding proceeds, the sizing head swings slightly upward, decreasing the size of the gap between the work and the outlet. Pressure slowly builds up in the air line, causing the mercury to rise in the U-tube. Just before the work reaches finished size the mercury touches a contact completing an electrical circuit and energizing a solenoid which slows down the speed of the feeding in movement. Grinding continues until the finished size is reached, the mercury having then risen in the tube until it touches a second contact, thereby completing a second electrical circuit, energizing a second solenoid and causing the wheel to move rapidly away from the work. Should the nature of the work permit it, the wheel may be caused to feed back from the work without the insertion of the slower feeding in movement.

Setting up of the device requires but a short time. All necessary readjustments are provided for. Air pressure or from 2 to 20 lb. per square inch is used. Any shop air line may serve as the source for this pressure with the use of two reducing valves.

Inexpensive Controlled Atmosphere Furnaces

The Electric Furnace Co., Salem, Ohio, has developed a new inexpensive gas atmosphere for use in controlled atmosphere furnaces for continuous bright annealing, deoxidize annealing and brazing.

Until very recently hydrogen gas was used almost exclusively for the reducing atmosphere in these furnaces. This type of gas has very satisfactory reducing qualities, but is a serious decarburizer of steels at elevated temperatures and cannot be used in the presence of steel where decarburization is an important factor excepting by special preparation of the parts, such as electro-plating the surfaces of the product before processing in the hydrogen atmosphere.

One of the important contributions to the art has been the development of a very low cost reducing atmosphere. This gas atmosphere is produced at the furnace location, utilizing a gas producer of a size to suit each installation. The cost of this reducing atmosphere may vary from 20c. to 30c. per thousand cu. ft., depending upon the cost of electric energy and base materials in the locality where the gas is produced.

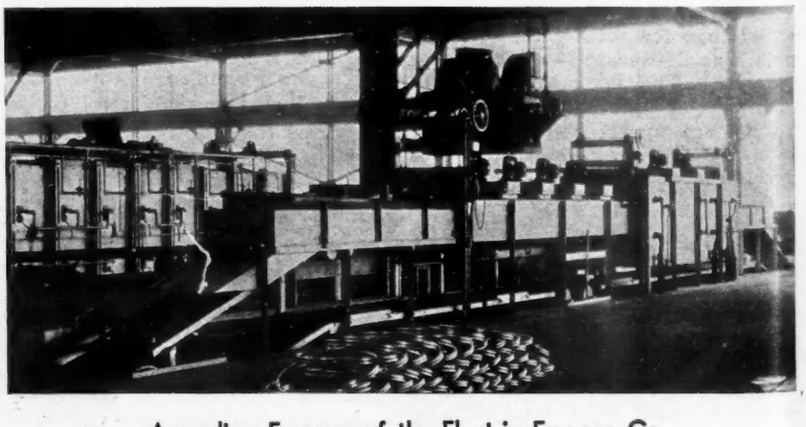
The ability to anneal or normalize continuously and at the same time deoxidize steel under treatment opens possibilities of savings not even thought of a few years ago. A brief summary of some of the applications of continuous furnaces with protective atmospheres follows:

1. Continuous bright annealing of non-ferrous materials.
2. Continuous bright annealing or normalizing of a wide range of ferrous materials such as strip, wire, sheet, tubing and rod.
3. Continuous scale-free heat treating of many low-carbon steel parts which can be drop-quenched.

One of the largest existing installations for the continuous bright annealing of non-ferrous materials is shown in the illustration. This 180-kw. electric furnace equipment is especially designed for the continuous bright annealing of copper tubing in coils up to 30 in. in diameter by 10 in. high and in straight lengths up to 35 ft. long.

Cast Chain for Conveyors

Chain Belt Co., Milwaukee, Wis., offer a new conveyor chain of Rex Z-metal which is said to be 30 per cent stronger than malleable chains



Annealing Furnace of the Electric Furnace Co.

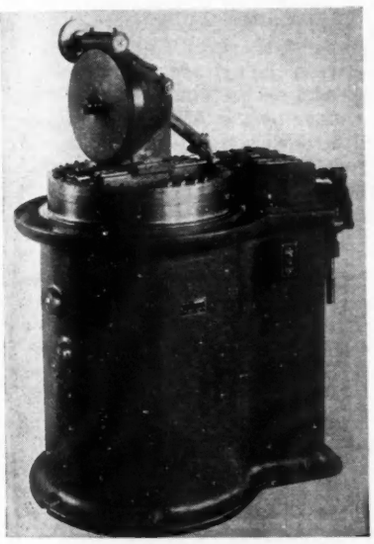
of the same size. It is cast and heat treated by special processes which give it characteristics said to be unknown in cast chain.

Rex Z-metal is said to offer a greater degree of hardness and is considerably more resistant to the corrosive action of both organic and inorganic acids. Because the metal casts true to pattern, the chain is said to secure exact sprocket fits thus increasing the life of both the chain and sprockets.

Taps and Inserts Automatically

To meet the demand for a high production tapping and screw inserting machine, an automatic machine of horizontal design has been brought out by the Globe Tapping Machine Co., Bridgeport, Conn.

This machine has been especially designed for light drilling, tapping, threading, screw inserting, burring, etc., the operator only placing the



Globe automatic horizontal tapping and screw inserting machine

parts into the work carrier, all other operations being automatic including the ejection. All bearings on the machine are lubricated by an automatic lubrication pump. The machine is entirely driven by a single 1200 r.p.m. motor mounted on an adjustable tilting plate in the base of the machine.

The machine is so designed that every operation is visible to the operator and easy to get at for adjustment should such be needed. Units can be placed in vertical position or on any other angle. Uniform parts can be hopper fed to the work carrier as well as feeding screws.

The machine illustrated is tooled up for tapping, hopper feeding and inserting screws, upsetting the screw thread to prevent loss of screw, backing out the screw and automatically ejecting electrical contact blades at a rate of 80 pieces per minute. The ejection is done by the screw which acts as an inspection in that only the completed parts with screws in them are ejected. The machine can be converted to handle different parts by merely changing the work carrier.

Tool Grinding On Production Basis

George Scherr Co., New York, N. Y., has just announced the Reinecker universal tool grinding machine which is claimed to place tool grinding on a production basis. The machine is equipped with an hydraulic table movement and full automatic hydraulic dividing head. It is designed for a variety of jobs including the sharpening of hobs, slab milling cutters, gear cutters, reamers, etc. Its range of applications can be extended to cylindrical, internal, face, and surface grinding by the use of special attachments.

Essentially the machine is built along the lines of a cylindrical grinder powered by individual motor drives.

The grinding slide can be moved in 2 V-guides and carries the column for the setting of grinding head height. After adjusting height, the column is locked through a handle. The cross movement of grinding slide is made by hand wheel, however, for external, internal and face grinding within set limits it can also take place automatically with every reversal of table, an adjustable curve preventing a further in-feed motion automatically after reaching the zero position.

The grinding head swivels through 350 deg. and arranged on a column, it can be set for every angle by scale and tightened by clamp screw. The truing device for tool sharpening is fixed to the grinding head. The device can be set to the required angle according to the shape of grinding wheel and can be used for truing cup and bevelled grinding wheels. The guide for the diamond is provided with fine adjustment.

The hydraulic dividing head is arranged with automatic spacing and adjustable feed-in motion. The movement of the spiral is obtained by pinion and rack. By means of change gears it is possible to grind an angle of lead up to 65 degrees. The indexing operation is carried out by hardened and ground index-plates, these being easily interchangeable, and directly screwed on the indexing spindle.

Automatic spacing from groove to groove takes place after each reciprocating stroke of table. In this operation an hydraulic locking device comes into action which results in the instantaneous stoppage of work table in case of indexing errors. The play existing in the ratio gears for the spiral motion is compensated through the hydraulic adjustment of the rack at each table reversal.

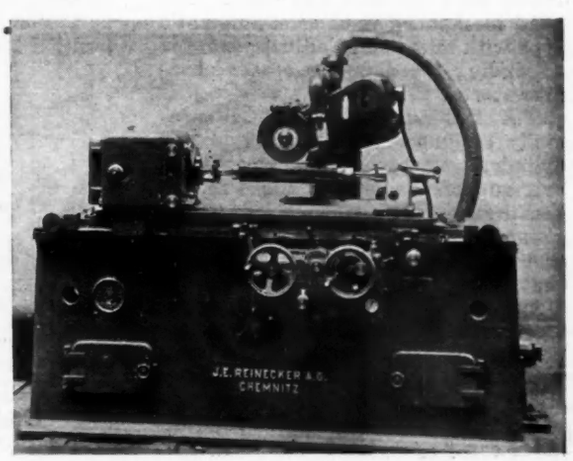
New Balanced Take-About Sander

The Porter-Cable Machine Co., Syracuse, N. Y., originators of the hand belt sanding machine, introduces another new model, the design of which follows closely that of the Dustless Take-About Sander, type B-10, introduced two years ago. The T-3 has all of the advantages of the B-10, with the exception of the dust-collecting system.

The outstanding features of the 3 in. Porter-Cable Take-About Sander is its fine balance, not only from right to left but from front to rear. This is accomplished by placing the motor in a horizontal position where it is said to operate under most efficient conditions.

Other advantages of this machine are:

1. Greater power than its predecessor, the type B-5.
2. Light weight—only 15 lb.
3. Low operating cost, using ½ hp. motor, D. C. or A. C. current.
4. Uses standard 3 x 24 in. belt—the least expensive size.

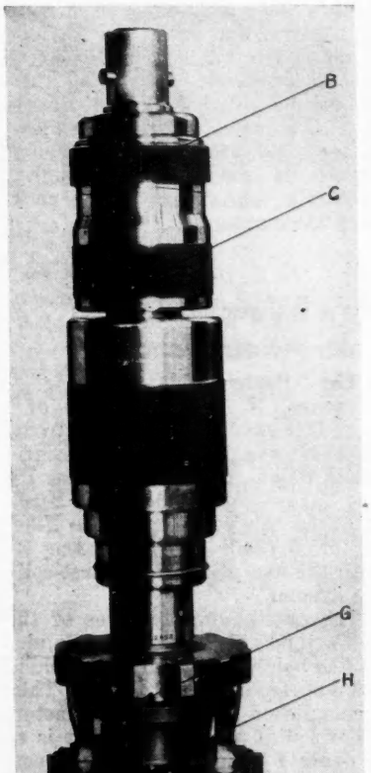


Reinecker universal tool grinding machine made by Geo. Scherr Co.

Hones Blind End Holes to Close Limits

Recent developments by the Micromatic Hone Corp., Detroit, Mich., has enabled them to produce equipment for accurately honing blind end cylinders to closer limits than heretofore possible.

In the new Model R-Z-S-F-E Tool illustrated, the body construction incorporates special features not regularly used for open end work. The head mechanism is of semi-automatic type with micrometer adjustments for expanding the diameter of the abrasive stones.



Micromatic Blind End Hone

The Z-S-F-E type body is especially designed for honing blind end cylinders where normal amount of over-run of the honing sticks is not permissible. The stone holders "M" swing at the pivot point "G" as the tool is expanded in such a manner that the lower ends of the honing stones are extended outwardly at a faster ratio of travel so as to compensate for a greater degree of stone wear at the lower end of the abrasive sticks.

Error of 0.0015 in. out-of-round or taper can be corrected within a limit of 0.0005 in. by the removal of 0.0025 to 0.003 in. stock from a ground hole in hardened steel cylinder. This is considered an outstanding accomplishment as the limits are held at the extreme blind end of the bore.

Constant Velocity for Transmission

Rzeppa constant velocity universal joints which were developed by The Gear Grinding Machine Co., Detroit, Mich., for front wheel drives and other automotive applications are also intended for machine tool drives and industrial applications where smooth transmission of power is desirable.

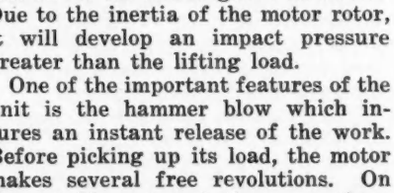
RZeppa joints are available in disk or bell types in nominal sizes corresponding to shaft diameters ranging from 1 to 2¼ in. Disk joints are capable of 15 degree deflection while the bell joints will stand 37 degrees angularity.

Pull-Push-Power

Following the introduction of the Cushmatic line of wrenchless operated chucks, The Cushman Chuck Co., Hartford, Conn., has brought out a non-rotating power unit, Push-Pull-Power. It is designed to carry a load under constant pressure in either direction for the full length of its stroke. Due to the inertia of the motor rotor, it will develop an impact pressure greater than the lifting load.

One of the important features of the unit is the hammer blow which insures an instant release of the work. Before picking up its load, the motor makes several free revolutions. On the rotable nut and the gear, there are abutments. When these abutments contact, the motor is in full speed and this speed multiplied by the inertia of the free movement of the rotor, enables the abutment on gear to deliver a powerful blow to the abutment on nut, thus instantly releasing the pressure on the gripping parts.

The total range of developed power depending on the size of the motor is 3000 to 35,000 lb. The unit can be assembled with the machine in any position from vertical to horizontal.



Cushman Non-Rotating Power Unit

Novel Carbon Dioxide System Battery

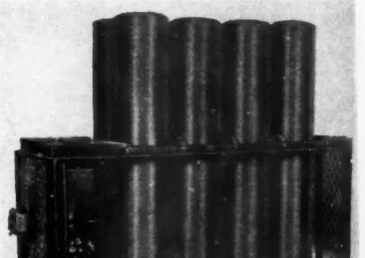
A new and novel method of mounting cylinders in a Carbon Dioxide fire protection system has just been announced by the American-LaFrance & Foamite Corp., Elmira, N. Y. The new system is known as the Inverted Alfite System.

Instead of being placed upright as usual, the cylinders are mounted valve downward on trunnions and are operated by the infallible force of gravity.

When the battery is operated, each cylinder drops a short distance, banging down with the full force of its 160 pounds plus impact on the cutter knob, thus piercing the gas sealing disk. This gives a degree of reliability and certainty of action never before realized. It cannot fail to release the gas.

Variation in cylinder height is no longer a troublesome factor. Installation and replacement merely involve setting the cylinder on its trunnion and making but one flexible connection by means of a union.

Due to the novel method of support and the fact that the connectors between the cylinder and manifold are flexible, each cylinder can be weighed in place by the Alfite weighing device without disconnecting or removing it from the battery. Thus, periodic inspection is made easy.



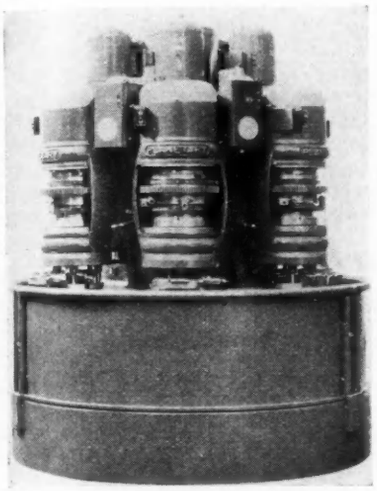
Inverted Alfite System

Special Grade for Finish Boring

Carboloy Co., Inc., Detroit, Mich., manufacturers of cemented carbide tools announce a special grade of Carboloy designated as X-831, developed specifically for use in finish boring the steel crank-end hole of connecting rods. With this new grade it is said to be possible to successfully bore an absolutely round hole at practical speeds and feeds and still obtain economical tool life. By its use on this application the grinding operation is eliminated.

Mills 1200 Pieces Per Hour

The latest production precision milling machine built by the Hall Planetary Co., Philadelphia, Pa., embodies a new machining principle called Continuous Planetary Milling. It is claimed that this machine has made possible a speeding up of production precision milling to a rate of 400-1200 pieces per hour, at the same time holding unusually close tolerances.



Hall continuous planetary miller

This machine performs many kinds of machining operations falling in the general class of thread milling and circular milling. In many cases several operations are performed simultaneously.

The machine consists of six standard Planetary milling heads mounted vertically about a large central supporting casting. The entire machine and the six heads revolve continuously about a central column with six vertically running spindles Planamilling the work. A vertical motor drives the entire machine through a large spur ring gear beneath the chip apron, while the milling spindles are driven by individual vertically mounted motors through a silent chain drive.

In no case is the machine stopped once it has been started. Provision has been made to replace cutters when dull by walking once around the machine while it is kept running, the whole operation taking only 20 seconds.

Individually motorized spindle drives to each head, independent milling feed controls, and individual fixture throw outs enable the operator to throw the six units in and out of production as circumstances warrant. This enables as few as two heads to continue producing in event of temporary slowing up of production.

In locating the work with respect to the cutter, it has also been made unnecessary to stop the machine. A mild wedge actuated by a large graduated dial will allow adjustments as fine as .00025 in. while running to the location of each chucking fixture.

Floor space, 96 x 96 in.; height, 96 in.; weight, 30,000 lb.; main drive, 7 hp.

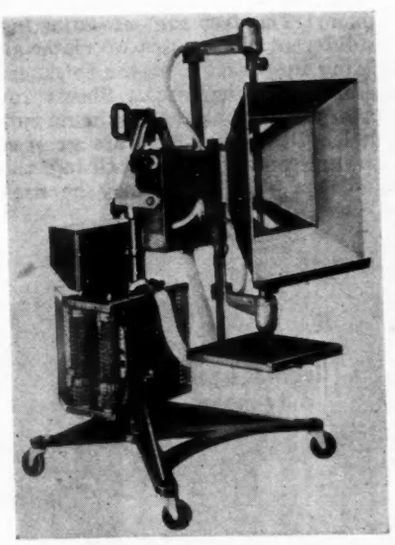
1 Up to 100,000 Candle Power

The C. F. Pease Co., Chicago, Ill., announces the introduction of a new Open Flame Arc Lamp, "Heli-O-Lite," capable of developing as high as 100,000 candle power or more illumination for black and white color work, printing or photography.

Features of the lamp are: more intense illumination equalled only by summer sunshine and secured by the use of high variable amperages heretofore unobtainable in photographic lamps. Because of this high intensity of illumination, the "Heli-O-Lite" is said to make exposures three times as fast as ever before and at the same time, increasing the quality of negatives and prints, especially in the case of color work.

A special two-speed toggle switch is provided so that if desired the high amperage consumption of the lamp can be cut in half and the candle power output correspondingly reduced. Extra switches can also be provided at small additional cost, if desired, thus providing a means of wide selective power for regulating the amount of light necessary according to character of work being done.

The lamp will burn from 25 to 40 minutes without breaking of the arc and when it does break there is merely an instantaneous flash scarcely noticeable. The lamp requires retrimming only once in five hours, and each of the two 12-in. carbons will be consumed down to within 2½ in. of total length, thus providing a total of 19 in. of full carbon consumption with minimum waste.



Pease New Open Flame Arc Lamp

Carbons are set in vertical position, are securely held in position, and do not require adjustment at any time except when retrimming. They are automatically fed by a positive balanced mechanism which floats the carbons without the use of dash pots and accurately compensates for any variation in electrical energy, thus preserving a uniform arc of controlled length and constant light value with minimum of flickering and with less than 10 per cent fluctuation in candle power at any time. Also, the arc maintains a constant central focus and remains a uniform distance from the copy of printing subject throughout the entire burning period of five hours.

It is regularly furnished mounted singly on either spring balance or telescoping type standard but can also be furnished in double deck arrangement when mounted on spring balance type standard.

Feather Control for Spray Gun

Production spraying is said to be placed on a new basis by the introduction of the Type MB removable head spray gun recently announced by The DeVilbiss Company, Toledo, Ohio. The gun features "Feather Touch" control by virtue of a new air trigger design. Hand strain and "finger corns" are eliminated. A light touch keeps the gun in action. There is a shorter trigger movement; consequently, it is not necessary to stretch for the trigger. Operators are said to have used the MB gun for as long as nine consecutive hours without experiencing arm, hand or finger fatigue.

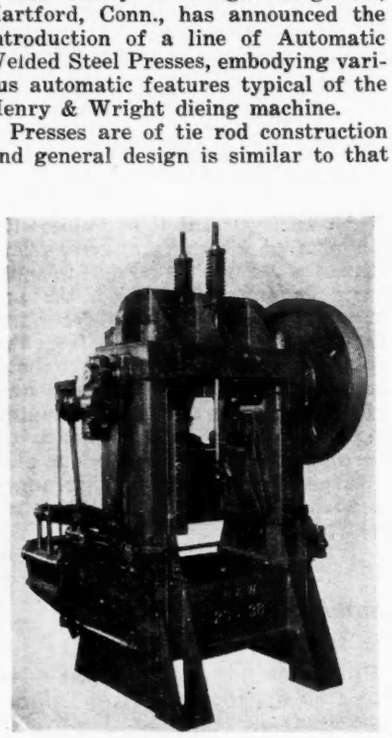
DeVilbiss feather control spray gun

The body of the gun is a heat-treated aluminum alloy forging. The spray head barrel is supplied either in brass or aluminum. The gun can be connected with any spray painting outfit now in use.

Automatic Feed Steel Presses

The Henry & Wright Mfg. Co., Hartford, Conn., has announced the introduction of a line of Automatic Welded Steel Presses, embodying various automatic features typical of the Henry & Wright dieing machine.

Presses are of tie rod construction and general design is similar to that



Henry & Wright dieing machine

of the company's standard line of welded steel straight sided presses. Bed, uprights, crown and slide are constructed from special welding quality steel normalized and annealed before machining to release stresses, thus eliminating possibilities of later distortion. Design of these principal members is claimed to be such as to reduce deflection to minimum and to provide high resistance to fatigue.

Crankshafts are made from hammered alloy steel forgings heat treated before finish turning and are mounted in removable hard bronze bushings, crank pin bearings also being bronze bushed. Spring counterbalanced slide, positive clutch, releasing brake, together with single and continuous operating lever, are provided as standard equipment.

Automatic double roll feeds of the type which has been developed over a period of years as standard equipment for the Henry & Wright Dieing Machine (automatic high speed press having crankshaft below bed) are included, these feeds insuring accurate action at high speeds. The hardened rolls are ground to close limits to provide perfect feeding accuracy and are of substantial diameter, thus having ample contacting surfaces. Rolls are actuated through ratchet and pawl mechanism, outgoing rolls being driven from crankshaft through helical gears and driving rack, incoming rolls being driven in synchronism with outgoing rolls by means of connecting rack. Feed pitch is adjustable, and timing of roll feed action with relation to crankshaft rotation can readily be carried by adjustment. Cam actuated roll release mechanism is also included.

While it is not claimed that these new presses will produce results equal to those of the Henry & Wright Dieing Machine, the makers state that the extreme rigidity of the specially designed steel frames, together with the precision **roll feeds,** makes possible use of progressive dies in the high speed production of close limit stampings. The Automatic Steel Presses are in a somewhat lower price range than are the Company's Dieing Machines of equivalent capacity.

Press illustrated has 5 in. crankshaft and is 38 in. between uprights. Roll feeds of this press handle material up to 12½ in. in width, feeds having maximum pitch of 8½ in. Automatic heavy duty adjustable scrap cutter and provisions for V-belt drive are included on press illustrated.

Hold-Downs Adjust for Metal Thickness

To meet the demands for shearing heavy plate, the Niagara Machine & Tool Works, Buffalo, N. Y., has developed the M Series Shears of heavy-duty construction.

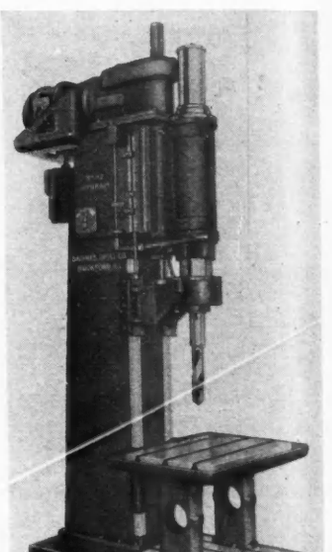
An outstanding feature of the machine is the independent chuck carrying the lower knife which permits permanent location of the bed and facilitates adjustment for proper knife alignment.

The box section crosshead carrying the upper knife is counterbalanced with air cylinders mounted in the crown. These cylinders directly connected to the regular shop air-line operate with practically no loss of air in that the down-stroke forces the air back into the line.

Another feature is the patented hold-down, each foot of which is arranged with an individual spring cushion. The feet are self-adjusting for different thicknesses of material, building up pressure as the thickness of material increases. Sheets of shorter length than the maximum cutting length of the shear are gripped with uniformity without tilting the hold-down. The shear may be used for cutting full capacity plate at one end and light gage plate at the other in the same stroke.

Hydraulic Ram Drilling Machine

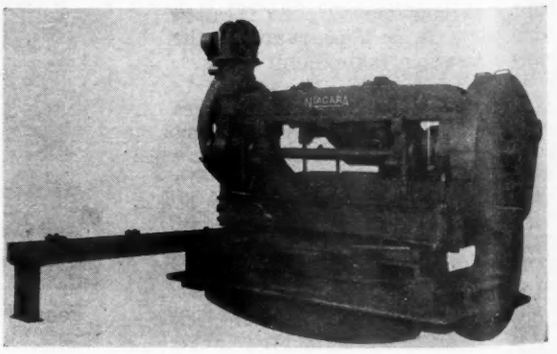
Barnes Drill Co., Rockford, Ill., has just come out with their latest development in drilling machines, the No. 2 Hydram Driller, in which the hydraulic pressure feed is applied directly over the cutting tool. The machine has a capacity in high speed drills up to 2 in. in diameter in mild steel.



Barnes No. 2 Hydraulic Driller

The hydraulic control permits any desired sequence of actions for a complete cycle such as automatic rapid approach, normal feeding rate, hydraulic dwell for facing, and quick automatic return. The Hydram feed unit is adaptable to a wide range of spindle travel, and multiple head applications for horizontal, vertical or angular locations.

Motor recommended is 7½ hp., 1800 r.p.m. Floor space required, 50 x 35 in. Net weight complete, 4400 lb.



Niagara heavy-duty shears

Heavy Tank Compactly Made

Users of spray-painting equipment for heavy finishing operations will be interested in the 60-gal. pressure feed tank announced by the DeVilbiss Company, Toledo, Ohio.

The tank is 39¼ in. high and 24 in. wide. These proportions are said to result in easier handling in filling and cleaning operations. The walls are of 0.125 in. open hearth steel, heavily galvanized inside and out. A pressed steel cadmium plated cover has 12 clamps. A new style revolving agitator works close to the bottom of the tank, preventing the possibility of accumulation of pigment. Regular equipment includes pressure regulator and gage, safety valve, relief valve, air inlet valve, two air and two fluid outlets.

It can be supplied either with top or with bottom outlet, and with or without gage glass to indicate the level of material within the tank. Other variations of assembly can be furnished to fit the installation in question.

Presses Feature Welded Construction

The Allsteel Press Co., Chicago, Ill., has brought out several new presses of all steel welded construction. Illustration shows a No. 6C30 Verson Allsteel straight sided, single crank, double geared, single drive power press of 175 tons capacity with hydro-pneumatic cushion in the ram, pneumatic cushion in the bed, and V-belt drive.

It is of welded steel plate construction in which the plates are torch cut, dovetailed and welded into units of great strength and rigidity. The frame, ram, gibs, bolster and gears are fabricated from steel plate, pinions are forged. The front adjustable gibs are of welded one-piece construction which assures that they are always in parallel. The rear gibways are integral with the frame and are joined together by a heavy stiffening member. Gibs and ways are lined with renewable bronze plates. The ways are exceptionally long and the bottom of the ram does not leave them at any point of the stroke.

The arrangement of cushions in both ram and bed enables the user to blank, form, draw and redraw the parts shown in one stroke of the press, doubling the production and practically eliminating rejected work which formerly ran as high as 10 per cent. Both cushions are adjustable for pressure and when not required for a given job, they may be put out of service without removal or disconnecting, making the press an all-purpose machine.

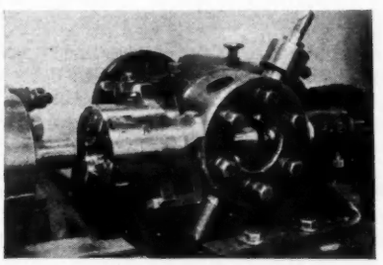
This press has 30 in. x 30 in. bed area, 16 in. shut height, 8 in. stroke, jaw clutch and weighs about 16,000 lb. It is operated by a 10 hp. 1200 r.p.m motor and requires no pit.

Below is shown a battery of Verson Allsteel horizontal back geared gap presses with 14 in. stroke, 14 in. shut height running 75 strokes per minute. They are used for deep drawing work and with special devices with which the user has equipped them are said to have speeded up production 400 per cent.

Self-opening Die Head For B & S Automatics

The Eastern Machine Screw Corp., New Haven, Conn., has developed an H & G self-opening die head for No. 2 Brown & Sharpe Automatic screw machines that will permit threading up to full 1 in. diameter, 2 in. long in both coarse and fine pitches. This die head greatly enlarges the range of work that can be threaded with a self-opening die head on these machines.

The possibility of using a self-opening die head instead of solid dies for threading these large diameters is said to provide many advantages. Since high speed chasers are used, higher cutting speeds are possible. Chasers may be easily resharpened a great many times. It is not necessary to reverse the spindle for backing off.



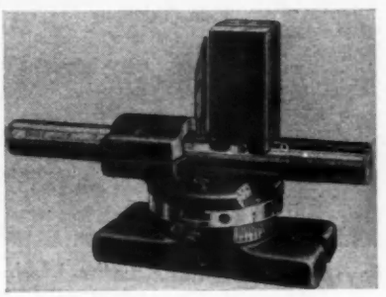
H & G self-opening die head made by Eastern Machine Screw Corp.

This die head, in spite of the limited outside dimensions, takes the same chasers as used in all 1 in. sizes of H & G Die Heads.

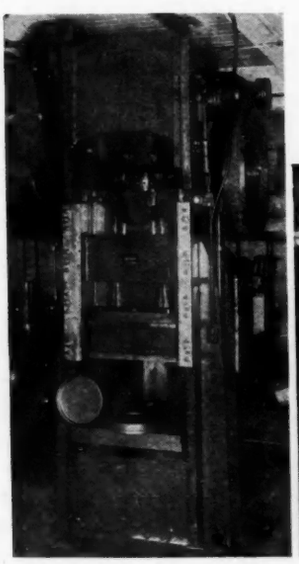
Improved Chaser Grinding Fixture

The Geometric Tool Co., New Haven Conn., anounces the Style E chaser grinding fixture which has many important improvements over the universal fixture brought out in 1929. For example, an additional plate has been added which permits the fixture to be offset thus giving the proper chamfer clearance for tapped (hobbed) die head chasers or collapsing tap chasers. This offset plate is equipped with opposing adjusting screws so that fine adjustment may be readily made and then the whole locked solidly in place, thus permitting the easy duplication of grinds. Another feature is the tongue and groove method of holding the holder on the fixture bar, which gives a more sturdy and more accurate support.

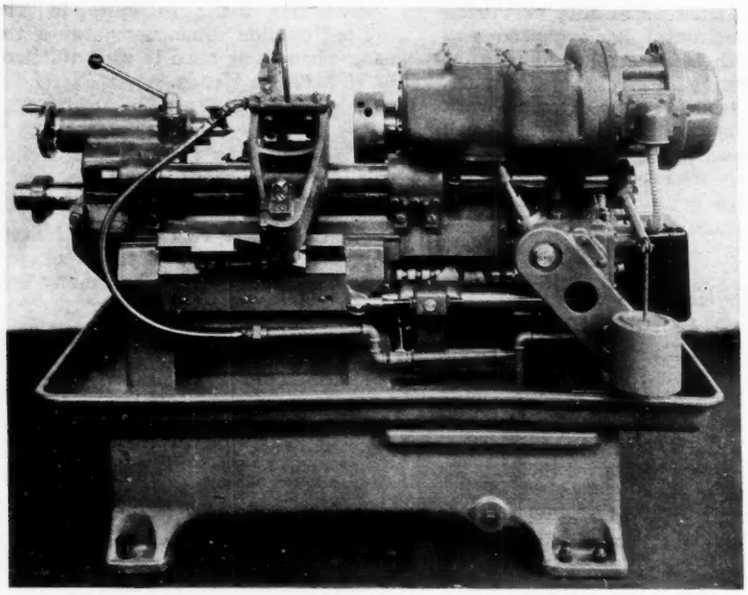
The fixture is a complete unit in itself. One holder for one tool size of geometric chaser is furnished at no additional cost with every fixture.



Geometric Style E Chaser Grinding Fixture



Left—Allsteel No. 6C30 Verson single drive power press. Right—Battery of Verson Allsteel horizontal back-geared gap presses.



Fay 8 In. Automatic Lathe Made by Jones & Lamson Machine Co.

For Light Fast Work

Six spindle speeds in any one of four ranges are offered on the new 8-in. Fay automatic lathe recently announced by the Jones & Lamson Machine Co., Springfield, Vt. It is recommended for small shafts, small pistons, etc., and for light finishing operations on larger work such as transmission shafts and other transmission parts.

The tooling possibilities of the larger Fay lathes are incorporated in this machine. Multiple tooling can be arranged on the carriage to turn various diameters straight or taper. The back arm is arranged to face and form any number of shoulder lengths or diameters. A third cutting head, or auxiliary attachment, can be installed on the machine for turning or facing. With this combination of tool movements a multiple tool set-up can be made on small light work, the same as has been furnished on the larger Fay automatic lathes.

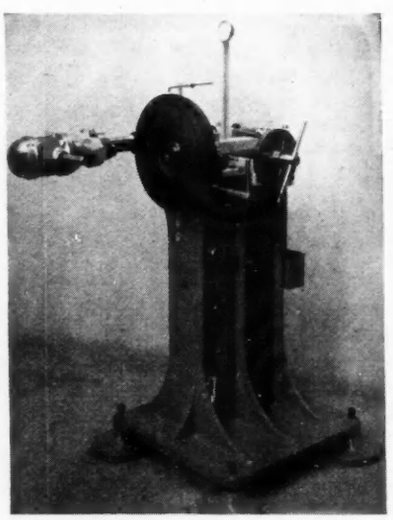
The headstock is equipped with a built-in motor controlled by push buttons conveniently located on a control panel on the front of the machine. The electrical control box and the wiring are all built into the machine. This equipment provides start and stop buttons, and also, by moving a switch on the control panel, the spindle can be jogged with the starting button. The spindle has a flanged nose 6¼ in. in diameter with a taper pilot.

The machine is equipped with three sets of feed change pick-off gears, giving six different rates of carriage feed with the standard carriage cam ranging from 0.004 in. to 0.040 in. per revolution. Faster or slower feeds may be obtained by the use of special cams, or special feed gears.

The fast motion of the machine is obtained through a clutch on the back of the machine operated with dogs on the control drum. The machine is stopped by a dog on the control drum contacting with an automatic switch.

The carriage is supported on a hardened and ground adjustable former. This former is mounted on a relieving slide so arranged that at the end of the turning cut the tools can be relieved so that the work is not scored on the return stroke. *The return stroke is also automatic.*

The standard machine is made in two lengths, 8 x 15 and 8 x 45 in. The floor space required is 32 x 70 and 32 x 100 in. respectively, while the net weight is 2850 and 3600 lb. Both sizes are driven by a 5-hp. motor running at 1800 r.p.m.



Olsen Style "L" Automatic Weighing Static Balancing Machine

No. 61 Hercules High-Frequency Grinder

The Buckeye Portable Tool Co., Dayton, Ohio, has just placed on the market another high-frequency electric tool, the No. 61 Grinder, built in two speeds, 3800 r.p.m. for use with 6 in. vitrified emery wheels and 5400 r.p.m. for use with 6 in. elastic bonded emery wheels. The 3800 r.p.m. tool can also be used with 8 in. elastic bonded wheels.

Features of these tools are the cool running motor, the stream-line ventilation system and the mounting of the stator on insulating pads within the motor housing, resulting in an extremely low temperature rise, thereby increasing the efficiency of the tool.

The Hercules plug-in cable is another decided improvement, as it makes it possible to change cables right on the job instead of sending the tool to the tool room to have a new cable installed.

Buckeye No. 61 grinder

Static Balance by Hand Alone

Automatic static balancing of flywheels, clutch parts, and assemblies by hand-operated equipment is said to be solved by the automatic weighing static balancing machine, Style L, recently developed by the Tinius Olsen Testing Machine Co., Philadelphia, Pa.

The operation of this machine is simple, and consists merely of mounting the part to be balanced on adapter fitted to spindle of machine, with the weighing system locked in position. The locking system is now released and the reading on indicator at top of machine noted, and part to be balanced turned on its mounting with weighing system locked until point is reached where dial indicates zero. At this stage the pointer at top of flywheel in illustration indicates the exact angle of unbalance. The part to be balanced is now turned 90 deg., weighing system released, when pointer on dial indicator will show the amount of static unbalance.

The dial indicator may be set so that the markings will indicate either the amount of unbalance in range desired in ounce inches to be removed or added, or in any other system as may be preferred for convenience or production.

The machine is also shown with an electric drill mounted on same and provided with control whereby correction to parts can be quickly performed on a production basis.

Stub Reamers With Decimal Sizes

Pratt & Whitney Co., Hartford, Conn., has just placed on the market a new line of Stub Screw Machine Reamers designed primarily for automatic screw machine work and for reaming jobs requiring short tools. These stub reamers provide the decimal sizes necessary in accurate production work where close fitting is needed. The decimal sizes are obtained by carrying the reamers in stock as standard blanks which are fluted, hardened and shank ground. They are finished to the required size to order, making possible quick delivery of true decimal size tools.

The new stub reamers are low cost economical tools made of high-speed steel properly heat treated for toughness and durability. The design produces very free cutting. These tools are successful in drill presses, hand-screw machines, some styles of tapping machines, and for reaming nut blanks. They are particularly well adapted for use in floating holders. By using a pin through a hole in the shank it is very easy to rig a simple floating holder inexpensively.

The reamers are carried in stock in 15 sizes of blanks ranging from series No. 1, which goes up to and includes .081 in., up to series No. 15, which covers the range from .4701 in. to .500 in. inclusive.

Takes 200,000 Lb. and Under

A Universal Testing Machine, the Southwark-Heydekampf, with hydraulic drive, self-indicating hydro-mechanical weighing system and built-in, high magnification stress-strain recorder, is offered by the Baldwin-Southwark Corp., Southwark Div., Philadelphia, Pa. It has a capacity of 200,000 lb. and under.

Accuracy within ½ per cent of load reading or ½ dial division whichever may be the larger.

Sensitivity of 1/5 of one dial division in all ranges. There are 1000 divisions on a 20-in. diameter dial. Loads are readable to 1/5 of one division.

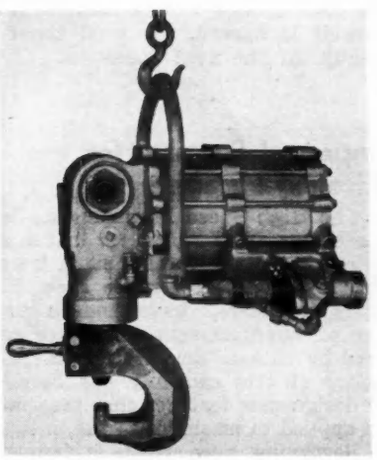
Multiple loading ranges on a single dial. Range indication may be changed by rotating a disk with the finger like a dial of the automatic telephone. Range changing is error-proof. A positive maximum load indicator is provided.

170 lbs. of Riveter Develops 15 Tons

Aluminum alloy castings have been used extensively in the construction of a new yoke type compression riveter recently developed by the Hanna Engineering Works, Chicago, Ill. Other major parts are either hardened and ground alloy steel forgings or heat-treated alloy steel castings. The result is an unusually light and compact riveter for portable use.

The riveter weighs but 170 lbs. and develops 15 tons between the dies. This tonnage is sufficient for heading 5/16 inches diameter cold rivets. The mechanism is entirely enclosed and operates in a bath of oil. The yoke may be swiveled 360 deg. upon the die axis and is quickly removable for interchange with yokes of other shape, reach and gap. The yoke shown has a reach of 3 inches and a gap of 3 inches.

When suspended from a Balancer which provides free vertical movement and which is in turn suspended from a minature crane, which provides free horizontal movement, the riveter may be quickly and easily moved from rivet to rivet though these may be spaced some distance apart. Such an installation is particularly suitable for assembly riveting automobile chassis frames of the new "X" cross member design which involve box cross section members with rivets therein that must be reached through holes in one web of the box. The chassis frame remains stationary while the rivets are driven by the portable riveters.



Hanna yoke type compression riveter

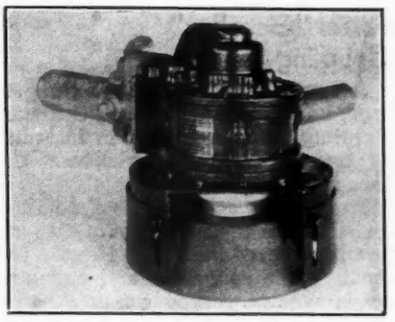
New Vertical Grinder and Disc Sander

The Rotor Air Tool Co., Cleveland, Ohio, has increased its line of Vertical Surface Grinders and Disk Sanders of the type illustrated below, to include several models, each with a fixed speed for a specific use.

For grinding down welds the 5500 r.p.m. model is recommended with a 6/4 x 2 synthetic bond flaring cup wheel, as it enables the operator to control closely the removal of excess to the level of the adjoining metal. The same model with a 6 x 1½-in. synthetic bond cup wheel is used on flat surfaces.

To obtain a fine finish on metal surfaces the 4700 r.p.m. model is used with a 9-in. flexible sanding pad and abrasive disks which can be had in a wide range of grit sizes.

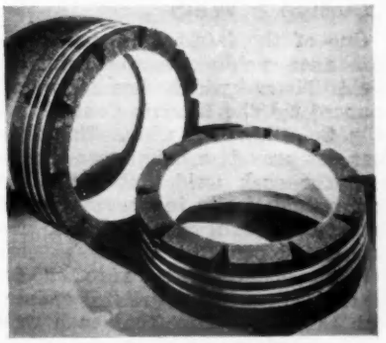
Another model, 3600 r.p.m., is used extensively with a 6-in. cup-shape wire brush for cleaning rust, paint and scale from metal surfaces.



Rotor Vertical Surface Grinder and Disc Sander

Segmented Form Provides Economies

The Blanchard Machine Co., Cambridge, Mass., has added the sectored wheel to the line of wheels and segments which it manufactures for its surface grinders. It is a one-piece wheel having the desirable features of a segment wheel, but without its disadvantages. The fact that the wheel is in one piece, mixed, molded, and baked, as a unit, is said to assure uniformity of grade. The inner wall carries the water down to the face, and also gives a continuity to the wheel face that prevents pounding. The external notches do not collect dirt, and are shaped to equalize the work done by grains of abrasive at different circumferences. Tests show that this sectored wheel has ample strength for heavy duty. It is made in 18 in. x 5 in. x 14 in. size, for use on No. 16 Blanchard Grinder.

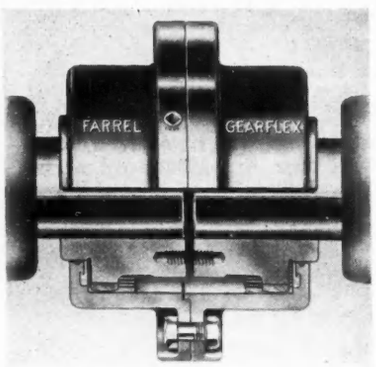


Blanchard sectored wheel

Farrel "Gearflex" Couplings

A new flexible coupling of the gear type, known as the Farrel "Gearflex" Coupling, has recently been introduced by the Farrel-Birmingham Co., Inc., Buffalo, N. Y.

The double engagement type illustrated consists essentially of two externally geared hubs keyed to the two shafts to be connected and engaging an internally geared floating sleeve which encases the two hubs. With two sets of spur gears, one at each end of the floating sleeve, misalignment is compensated for by the sleeve assuming a neutral position between the two shafts. Thus, all whip or crank action is eliminated, relieving bearings and shafts of heavy pressures or vibration.



Farrel-Birmingham "Gearflex" couplings

The large reservoir between the hubs and the floating sleeve carries the supply of lubricant. When the coupling rotates, centrifugal force throws the oil to the inner surface of the floating sleeve where it spreads between the gear teeth, entirely immersing the load-carrying surfaces in a bath of oil.

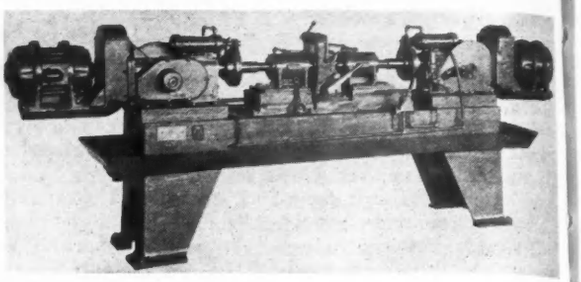
The coupling is also made in a single engagement type which has only one externally geared hub in engagement with an internal gear in the sleeve, the other hub being solid and the sleeve bolted to it.

Controls the Time to Insure a Weld

One of the latest developments in resistance welding is the automatic Weld Timer, which has been announced by The Electric Controller & Mfg. Co., Cleveland, Ohio. This timer does not provide a definite amount of time for each weld, but varies the time automatically in inverse proportion to the rate of current flow to produce a 100 per cent weld.

When installed and adjusted for the desired range of work it is claimed with this new device that each weld will be perfect and all welds will be uniform regardless of fluctuations in line voltage, condition of electrodes, variations in thickness of material, amount of rust, dirt, scale, etc.

The standard type of automatic weld timer consists of a rectifier tube which charges a fixed condenser in proportion to the rate of current flowing in the welding circuit. When the charge reaches an amount sufficient to pass current through two neon-gas-filled tubes, a small relay is operated which in turn opens the relay controlling the main line contactor. The tubes are in the circuit only when the welding current is on, so that as soon as the main welding circuit is opened, the weld timer is ready for the next operation.



Millholland connecting rod facing machine

Improved Features for Riveting Hammers

The High Speed Hammer Co., Inc., Rochester, N. Y., pioneers in the development of Helve Hammers, known as "Rotary Type Flexible Blow Riveting Hammers," have made a number of improvements which are covered by patents recently issued. The policy of this company has been to so design new features that they may be applied to machines in use, instead of developing new models at frequent intervals.

What they describe as one of the most outstanding improvements relates particularly to the design and assembly of the rubber cushion which is interposed between the front end of the hickory helve and the reciprocating hammer. These features are covered by U. S. Patent Serial No. 586,052.

The primary object of the present design is to rigidly secure the rubber cushion to the under side of the helve so that the helve and the cushion will move as a unit. The friction and impact incident to striking the reciprocating ram, in this way, is confined to the lower face of the rubber cushion; thereby reducing friction to a minimum and materially prolonging the life of the cushion. By repeated and severe actual breakdown tests, it has been shown that the life of this part was increased ten times or more.

Another improvement is that the design eliminates the necessity of the disassembling of the helve in order to replace the rubber cushion as previously. In the present case, removal of two nuts enables the replacement of the rubber cushion, leaving all other parts intact.

200 to 300 Rods Per Hour

A double end Connecting Rod Facing Machine has been developed by the Millholland Sales & Mfg. Co., Indianapolis, Ind., for accurately facing and chamfering both sides of a connecting rod at one time. The machine consists of two No. 5 Millholland Units opposed in a horizontal position with the work-holding fixture in between. Boring bars mounted on precision ball bearings carry the cutters for the facing and chamfering operation and the Machine Units are provided with cam feed so that the cutters are rapidly brought up to the work and the surplus stock quickly removed and the feed changed for finishing and a dwell for final facing.

Production from this machine is from 200 to 300 rods per hour.

The same machine can be arranged for rough boring and finish boring connecting rods and other work requiring accurate operations.

Lapping Wheels and Hand Laps

Thomas Prosser & Son, New York, N. Y., announce that they are now representing A. C. Wickman, Ltd., of England, for Spedia lapping wheels and hand laps, for Widia and other cemented carbide cutting tools of all descriptions. These wheels quickly and easily produce an exceptionally fine finish on the cutting edge, obtainable heretofore only with a special cast iron disk charged with diamond dust. The danger of chipping is also eliminated.

Spedia lapping wheels were developed for final lapping of Widia or other cemented carbide cutting tools where an exceptionally fine finish is desired. Ordinarily finish grinding is suitable for much work on cast iron, etc., but for fine finish, especially on non-ferrous materials, the lapping of the cutting edge with the Spedia wheel gives longer life, higher production, and much better finish on the work, which alone quickly saves the cost of the wheels.

Spedia wheels are stocked in cup form in the standard size, 3 in. diameter, ⅞ in. deep, ½ in. hole, ⅜ in. rim.

These wheels should be run at approximately 6000 surface feet per minute. Only the very lightest pres-

sure is necessary, and a good quality of thin oil should be applied to the face by means of a wick or other convenient means.

The Spedia hand lap is a further application of the principle of the Spedia lapping wheel. The hand lap is used advantageously in finishing new tools, such as Widia reamer blades, end mills, milling cutters, etc., and also for retouching tool set-ups in the machine, resulting in longer life between grinds. A good quality of thin oil should also be applied to the face of the Spedia hand lap.

Machines 180 Pieces Per Hour

Employing a new principle of feeding, the Millholland Sales & Mfg. Co. of Indianapolis, Ind., has developed a machine which automatically feeds a clutch plate down past three rigid milling units so that three ears are milled simultaneously.

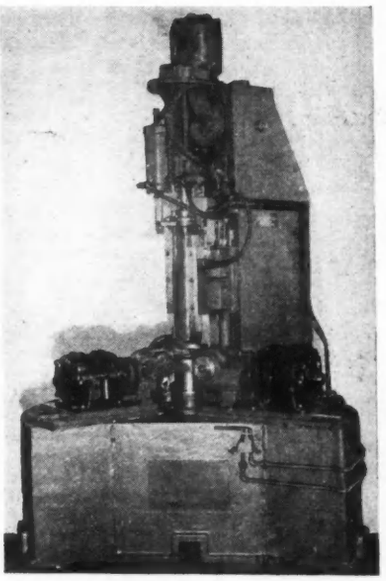
The machine consists of one No. 5 Millholland Machine Unit in vertical position to perform the automatic feeding function, with three special milling type units in vertical plane for the cutting function.

In operation the upper ram is lifted, permitting the lower ram under constant 80-lb air pressure to come to top of its stroke. This leaves space for loading. Operator loads piece loose and depresses air valve after which the upper ram rapidly approaches to clamp piece on the lower ram and then depresses lower ram until cutters are reached, after which cam on upper vertical unit slows travel down to feeding travel. At conclusion of milling cut, upper cam releases, allowing bottom ram to bring work back up to loading position.

Clutch plates from 9 in. to 14 in. in diameter can be handled in same machine, as milling machine units are adjustable in and out. Endwise adjustment of cutter spindles provides for accurate tool setting. Pick-off gears allow for change of feed and speed of cutter spindles.

This same machine with changes can be employed for milling other pieces where it is desired to mill from several directions simultaneously.

Mercury adds "Junior" lifts



Millholland Clutch Plate Milling Machine

Many Options In Lift Trucks

Recently announced additions to the Mercury line of lift trucks are the "Junior" types, offered in high lift, low lift, and telescopic lift models by the Mercury Mfg. Co., Chicago, Ill. Rated capacity is 3200 lb.; high lift Model A-1006 lifts to 67¾ in., and has a clearance of 83 in., low lift Model A-1007 lifts 23 in., and has a clearance of 46 in., telescopic lift Model A-1005-1 lifts 3200 lb. load to 67¾ in., and 2000 lb. load to 116⅝ in., and has a clearance of 83 in.

The features of the standard 6000-lb. Mercury lift trucks, Type EL, are continued in the "Junior" models; hydraulic lift, magnetic contactor control, brakes on the wheels, semi-elliptic spring suspension, ball bearings throughout, automatic overload protection, and double reduction drive axle of Mercury design.

The hydraulic lift mechanism, a distinguishing feature of Mercury lift truck design, is continued in the new "Junior" models. Platform lift is obtained through an oil-operated ram which carries large-diameter sheaves over which the two cables pass.

Power Units for Hydraulic Drives

To facilitate the application of the new H-P-M radial oil pressure pumps to various types of hydraulically actuated machines, a line of standardized H.-P-M Hydro-Power units has been developed by The Hydraulic Press Mfg. Co., Mount Gilead, Ohio.

Each unit incorporates an H-P-M radial pump pressure generator, direct driven from an electric motor through a flexible coupling. Both pump and motor are mounted on a base made of welded steel plate.

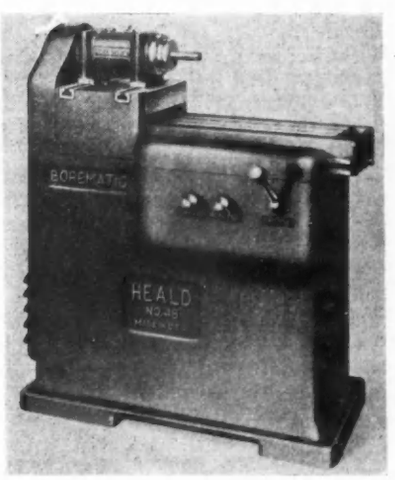
The pressure output of the radial pump is regulated by an automatic control which may be adjusted for any value within the operating limits up to 3000 lb. per sq. in. A modified form of this control is provided with a second adjustment whereby the volume of pump discharge may be regulated to any amount from zero to maximum.

When initial work of closing movements are to be performed at low pressure, a two-stage Hydro-Power Unit is recommended.

Bore-Matic for Short Runs

The Heald No. 48 Bore-Matic has been designed by The Heald Machine Co., Worcester, Mass., to meet the demand for a small machine, capable of handling a variety of work economically, yet having all the automatic features customarily associated with the "Bore-Matic."

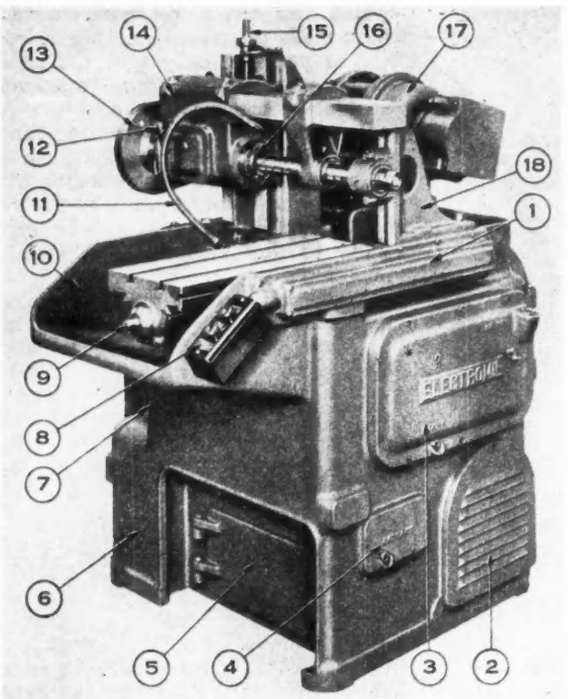
The machine is driven by a single 1800 r.p.m. motor direct-connected to a high duty hydraulic pump located low within the base. The motor and pump can easily be slid out of the base as a unit, after disconnecting two pipes.



Heald No. 48 Bore-Matic

The boring head drive is from the opposite end of the motor shaft, by multiple V belts. With the various pulleys which can be used, this motor gives a speed range to the boring heads of 625 to 3600 r.p.m. When lower speeds are desired, a 1200-r.p.m. motor can be fitted, with a hydraulic pump of larger capacity, to give a speed range of 425 to 2400 r.p.m.

Maximum and minimum center distances between heads of the standard type when two are mounted on the bridge are 10 in. and 5 3/16 in. respectively.



Sundstrand Electromil

Small but Fast for Light Milling

The Sundstrand Electromil, made by the Sundstrand Machine Tool Co., Rockford, Ill., is a small Rigidmil with automatic electric table-control for high-speed milling. It is designed to use extremely simple fixtures and it can be set up, or changed from one job to another, very quickly.

Feeds, ranging from 1 in. a minute to 80 in. a minute, are secured through pick-off gears. Eight gears, providing a consecutive series of twenty-five feeds as selected, are included in the standard equipment of each Electromil. Additional gears for almost any desired feed-rate between the limits indicated may be obtained as extras. Rapid-traverse at a fixed rate of 400 in. a minute is provided.

Two buttons, conveniently located at the operator's right, control starting and stopping of the entire machine. The "stop" button may be supplemented by an auxiliary foot pedal which enables the operator to stop the table movement at any time. With the upper selector switch set at "manual," the machine must be started after each cycle by depressing the starting button at the right of the operator's position. When the operator becomes accustomed to the rhythm of handling the work in process, the upper selector switch can be turned to "automatic" so that the table movement will repeat its cycle continuously unless halted by operation of the "stop" button or the foot pedal. If additional time for changing work-pieces at the end of the cycle is necessary the table may begin its movement at "feed" rate and change to rapid traverse as soon as the new work-piece has been secured in position.

Motor recommended for spindle head, 2 speed, ¾ hp. at 600 r.p.m. and 1½ hp. at 1200 r.p.m. Motor furnished for feed cycle, 1 hp., 1800 r.p.m. Net weight complete, 2700 lb. Floor space required, 40 x 49 in.

A larger machine, No. 2, 5 hp., is now in preparation.

Taps at High Speed

One of the recent additions to the line of Jarvis production tools is the Biax No. 1 high speed tapper announced by The Charles L. Jarvis Co., Gildersleeve, Conn. Its capacity ranges from 3/16 to ½ in. in diameter. The tool is ball-bearing throughout and is rated at a maximum speed of 3500 r.p.m. The chuck is a new type Jacobs double-grip designed to hold the square as well as the shank.

Super-Precision Square Type Level

A super-precision square type level has been placed on the market by the George Scherr Co., New York, N. Y., to meet the demands for a level of extreme accuracy, as required for the assembling of precision machine tools or other industrial machinery, where perfect alignment is of utmost importance.

The feature of this level is the rigid square frame, one side of which is plane, the other three sides of prismatic shape. In this way the level can be used for aligning horizontal and vertical surfaces as well as shafts.

Sensitivity is obtained by the longitudinal level, for which an accuracy of .0005 in. per one foot is guaranteed, which corresponds to one interval of the scale graduation. Converted into circular measurements, this is equal to an accuracy of 10 seconds of the arc.

To obtain this extreme precision, the vial of the longitudinal level is ground to barrel shape on the inside. It is filled with distilled chemically pure sulphur ether as well as thin air and then hermetically sealed by fusing the glass. The center of the bubble surface, when level, coincides with the highest point of the barrel shaped inside wall. From this point, the vial is graduated to both sides, each interval being 2 mm. apart. A secondary cross level is provided by means of which the level is held in horizontal position when using it on shafts. V-ways of machine beds, etc.

Checks Thickness Automatically

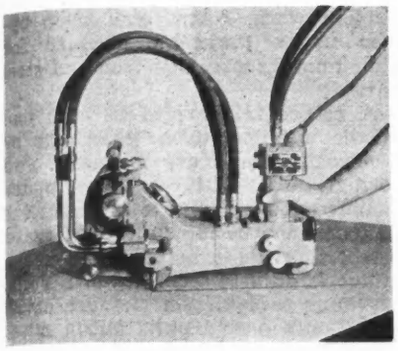
Federal Products Corp., Providence, R. I., has just placed on the market the Model 644 thickness gage which is fully automatic in operation. A feature of the instrument is the ability to clamp the work solidly before the measuring anvils come in contact with the work. The gage has two ¾-in. diameter aligning surfaces, the stationary gaging point being located at the bottom while the upper surface carries the point which makes contact with the dial indicator.

Federal 644 thickness gage

In operation, the work is inserted between the anvils and clamped by releasing the lever on the handle. This brings the work in perfect alignment with the gaging points, the thickness being read directly from the dial indicator.

Portable Cutting Machine Announced

A portable cutting machine, the Secator, weighing but 43 lb., has been announced by The Linde Air Products Co., New York, N. Y. Combining the portability of a blowpipe with the



Linde "Secator" portable cutting machine

accuracy and finish of a cutting machine, the Secator makes it possible to do high-quality cutting anywhere in the shop or in the field.

Essentially it consists of an Oxweld Type C-14-H blowpipe mounted on an electrically driven, air-cooled, dustproof chassis. It is equipped with a direct drive and runs either on a 1½ in. angle-iron track, furnished with it, or on any relatively smooth plate. When operated on the track, it does straight-line cutting automatically. For cutting simple shapes it can be guided with a hand-grip. For automatic circle-cutting, a center and a radius rod are furnished. For convenience of control, the oxygen and acetylene valves are on the chassis rather than on the blowpipe. The blowpipe can be adjusted vertically and horizontally and also to cut bevels up to 45 deg. Its cutting range is that of the C-14 blowpipe and the cuts are so clean and smooth that for many purposes machining is unnecessary.

Provides Twelve Speed Changes

A patented geared head lathe is now offered by The Cincinnati Lathe & Tool Co., Cincinnati, Ohio, in a range of sizes—17, 19 and 21 in. It is designed for motor mounting inside the leg under the head and is equipped with anti-friction bearings throughout, roller bearings being used in the head stock. When fitted with special attachments this lathe becomes an ideal machine for the tool room.

Twelve mechanical spindle speeds in geometric progression are readily available. Another feature is the use of an automatic oiling system which takes care of all important bearing points.

A quick change gear box provides 32 changes to cut threads in a range of two to 28 and feeds in thousandths per revolution from 0.008 to 0.120.

Motor size: 17 in., 3 or 5 hp.; 19 and 21 in., 5 or 7½ hp. Floor space, 38 x 90 in. and 40 x 144 in., respectively. Weight—6-ft. bed, 2800 lb.; 10-ft. bed, 4400 lb.

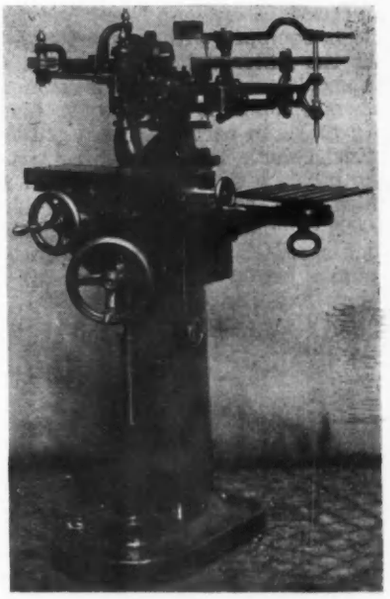
Three-dimensional Die Sinker

A newly developed three dimensional Diesinking and Engraving Machine No. H-3 was especially designed by the Hisgen-Nube Machine Co., Chicago, for the manufacture of diecasting molds and molds for the synthetic plastic products, also engraved dies, etc. The cavities in forming, stamping or forging dies as well as raised letter name plates, molds for the synthetic plastics, embossing rolls, and other various kind of work either in the three dimensional direction, or with raised or sunken profiles, can be engraved on this machine.

In forming a cavity in such a die an enlarged copy or a full sized 1-1 copy is mounted on the work table to the left. The tracer or stylus is then guided over the surface of the model, causing the engraving tool to reproduce the model on the die.

The model or pattern may be made of fairly soft material, or a dental plaster made especially for this purpose. The pantograph is a system of levers, which enable the contour of the model to be copied and can be so adjusted that the rotating engraving tool will have exactly the same movement as the point of the tracer or stylus giving a 1-1 ratio, or so that any desired ratio up to 10-1 can be obtained, as well as any desired reductions.

The two dimensional pantograph arrangement which provides for movement in the horizontal plane, is similar to that commonly used for flat engravings. The pivoting points are provided with SKF precision pre-



Hisgen-Nube No. H-3 diesinking and engraving machine

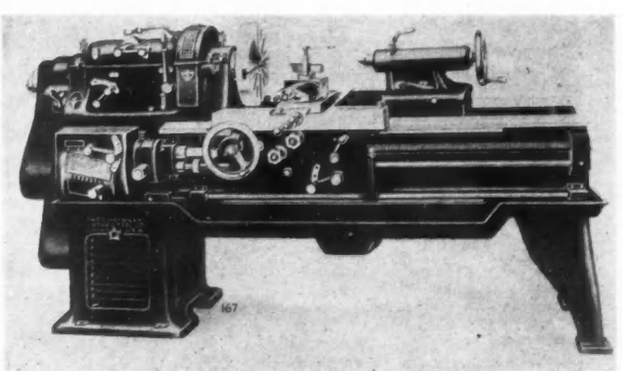
loaded double thrust radial ball bearings, and the engraving spindle runs in an amply adjustable split sleeve, machined from solid bars of nickel chrome maganese steel, and are also provided with SKF preloaded ballbearings. One of the pivoting levers has its outer end connected to the upper end of the tracer. The other end of this lever is connected with a vertical rod, that is connected to the second pivoted lever. At the end of the second lever is a trunnion yoke which engages a flanged groove or collar on the engraving spindles.

With this arrangement the tracer and the cutter are raised and lowered vertically, so that profiles having straight sides at an angle of 90 degrees with the base of the horizontal plane can be machined.

Tool Grinder With Three Wheels

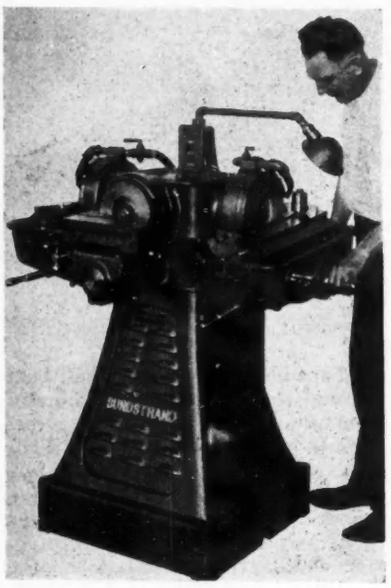
The Sundstrand 3-Wheel Tool Grinder just announced by the Sunstrand Machine Tool Co., Rockford, Ill., is said to meet modern requirements by grouping three smooth-running spindles in one machine and providing accurate means for obtaining and maintaining desired angles on cutting tools. All spindles are reversible so that right-hand and left-hand tools can be ground with the wheel or hone turning towards the cutting edge. This keeps the edge uppermost in plain sight and makes it most compact, keen, and durable.

The machine is available with any one of three speed combinations. In one, the speed of one spindle is suitable for grinding high speed steel tools and the speed of the second spindle is suitable for grinding cemented



Geared Head Lathe made by The Cincinnati Lathe & Tool Co.

carbides. Each grinding wheel spindle is equipped with a wheel suitable for the material it is to cut. In the second, the speed of both grinding wheel spindles is suitable for grinding tungsten carbides. One grinding wheel spindle has a roughing wheel; the other, a finishing wheel. In the third, the speed of both grinding wheel spindles is suitable for grinding high speed steel. One grinding wheel spindle has a roughing wheel; the other, a finishing wheel. The third spindle is equipped with a cast iron disk for honing, and it runs at the same speed in all three of the combinations.



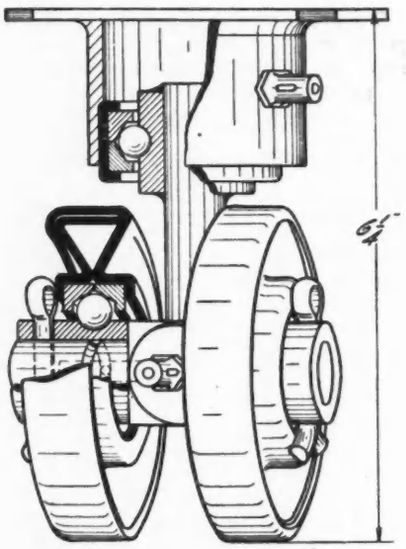
Sundstrand 3-wheel tool grinder

Three horsepower driving motor, Vee belts and coolant pump all completely enclosed and protected in well ventilated pedestal. Readily accessible. Suitable fixtures are available for accurately grinding and honing small and large tools, and for wheel-dressing.

Compensating Swivel Caster

A combination of standard parts, by the Mathews Conveyor Co., Ellwood City, Pa., originally designed for use in conveying equipment such as roller conveyors and wheel conveyors, has brought about a rugged ball-bearing swivel caster having wheels arranged to compensate for uneven floor surfaces. The caster is made in one size only. Its base plate or mounting plate is 4 in. square, having four holes for ⅜ in. bolts. The two ball bearing self-compensating wheels are 4 in. in diameter. The overall height from floor to top of mounting plate is 6¼ in.

Each caster has a continuous service capacity of 200 lbs. and an intermittent service capacity of 450 lbs.



Mathews rugged ball-bearing swivel caster

A complete caster weighs 7½ lbs. Loads from 800 lbs. to 1800 lbs. may be easily moved from place to place on dollies or trucks equipped with these casters.

Ex-Cell-O Precision Boring Machines

Single and double-end junior precision boring machines for manufacturers who require short production, high precision work have been placed on the market by the Ex-Cell-O Aircraft & Tool Corp., Detroit, Mich.

The double-end machine, Style No. 1212, is shown in Fig. 1. Some of the outstanding features of this machine are the compact design, low operating cost, full hydraulic control, uniform accuracy on production work, rough and finish operations on the same machine for aluminum, bronze, cast iron and steel parts.

A bridge is provided at each end of the machine, upon which one or two boring units are mounted. Two boring units with a drive motor mounted above them are shown at the left, and one boring unit with motor mounted beside it, at the right. Each bridge is adjustable on its own rails, providing a maximum distance of 28 in. between boring units and a minimum distance of 12 in.

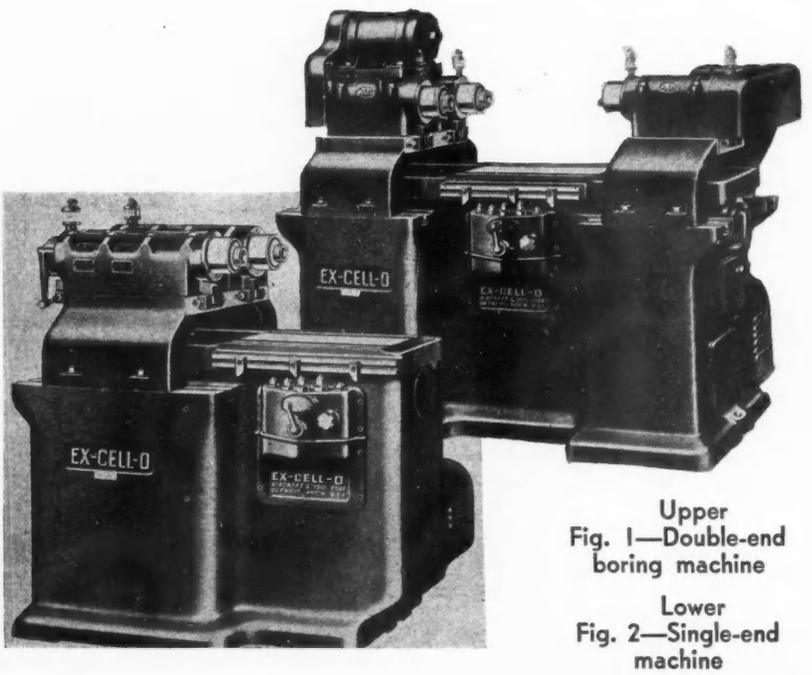
There are two different methods for driving the boring units—the inbuilt motor and the belt-driven type. When using the inbuilt type, a three-quarter horsepower motor rated at 1800 or 3600 r.p.m. is used. Only one speed can be obtained from this type of boring unit. On jobs where a range of speeds is required the belt-driven boring unit is used. A one-hp., 1200-r.p.m. motor may be mounted beside the boring unit or directly above it, depending upon the number of boring units required.

The hydraulic control unit is of Ex-Cell-O design and is mounted on the front of the machine below the fixture table.

The machine complete weighs approximately 3000 lb.

For applications where only one or two boring units are required the single-end machine, Style No. 2112, has been developed. This machine, Fig. 2, is compact is design and uses the same mounting bridge, hydraulic and coolant systems as are used on the double-end machine.

A different type of boring unit is used, having an inbuilt motor directly connected to the boring spindle and mounted in one holding bracket. These units and those shown on the double-end machine are interchangeable by the use of the proper bridge.



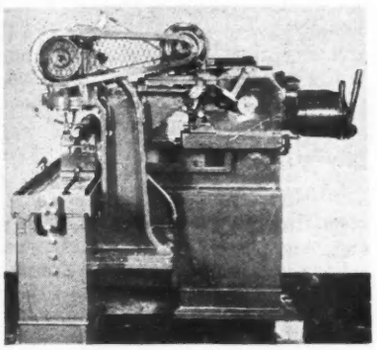
Upper
Fig. 1—Double-end boring machine

Lower
Fig. 2—Single-end machine

"Brinells" the Spot Automatically

A crankshaft brinneling machine employing more accurate methods of testing has been brought out by the Millholland Sales & Mfg. Co., Indianapolis, Ind. This machine automatically mills a spot on the crank and then automatically brinells the milled spot. The machine consists of a No. 4 Millholland Milling Machine Unit, a horizontal traversing work table and a brinelling instrument. In operation the crankshaft is placed on the table in Vee blocks locating against one throw and firmly clamped, the lever of the air valve on front of machine is pressed down, the Milling Machine Unit rapidly approaches work, slows down for Milling Operation, then rapidly retreats clear of the work. The table then rapidly traverses the crank under brinneling instrument, a cam depresses the plunger of the instrument for 10 seconds, and the table then rapidly traverses back to loading position.

It is claimed that brinelling an accurately milled surface with a definite time or brinelling operation insures more accurate results than ordinarily obtained.



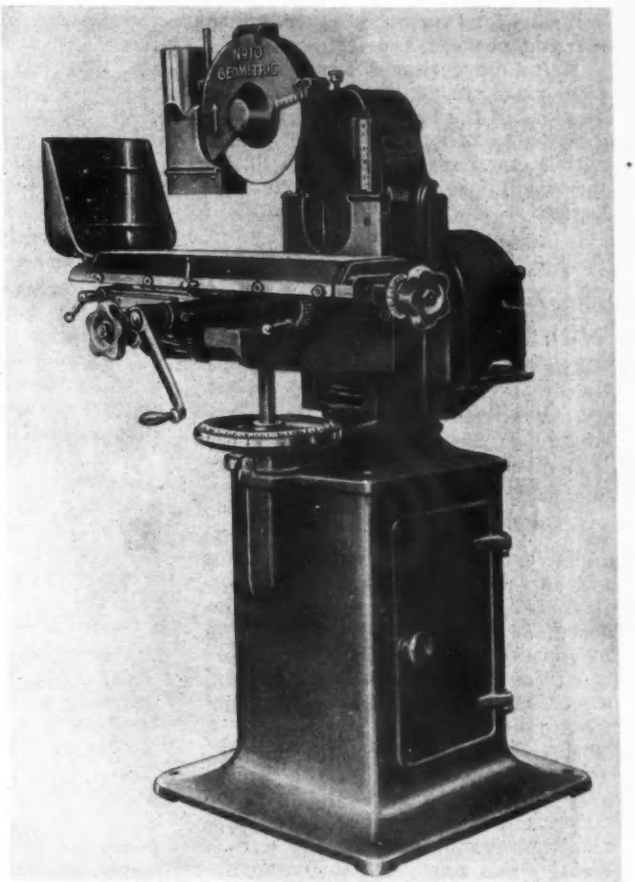
Millholland crankshaft brinelling machine

The production from this machine is 100 crankshafts per hour.

Longer Lasting Chasers Assured

A newly designed chaser grinder said to assure longer lasting chasers is offered by The Geometric Tool Co., New Haven, Conn. The No. 10 machine, with proper fixtures, will sharpen any kind or make of die head or tap chaser, milled, tapped, circular or tangent within its capacity. In addition, and because of its longitudinal transverse and vertical travel, it is adaptable for other tool grinding work.

The machine is supplied with or without the Style "E" Geometric universal chaser grinding fixture. It can, at the buyer's option, be furnished either for belt or individual motor drive.



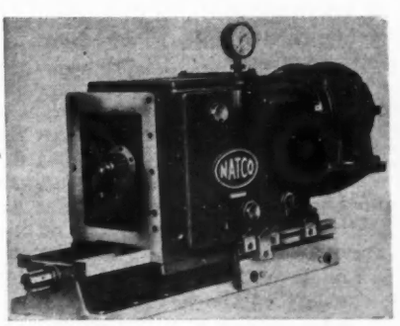
Geometric Tool designs new No. 10 grinder chaser

The fixture is mounted on the table with chaser holders, one for each size of chaser blank, mounted on this fixture. So mounted the chasers can be swung under the grinding wheel for chamfer and face grinding to practically any angle and type of grind.

It has a longitudinal table travel of 15 inches and traverse travel of 5¼ inches. The net weight of the machine is 875 lb. without the motor. Floor space required is 52 x 48 inches.

Hydraulic Units Self-Contained

A line of interchangeable, self-contained, hydraulic feed units has been placed on the market by the National Automatic Tool Co., Richmond, Ind. The six sizes in this line cover a range from 3½ to 16 hp. available for drill head drive while drilling capacity in mild steel ranges from five ⅜ in. holes to fourteen ⅝ in. holes. The range of feed in inches per minute is from 1-10 in.



New Natco hydraulic feed unit

Units are arranged with a semi-automatic hydraulic feed, the operator starting the cycle by pressing a single pushbutton. A balanced valve of the load and fire type, mounted within the unit, working in connection with trip dogs, located on the right side of the unit base, control the movements of the unit after the cycle is started. The length of the rapid traverse and feed is adjusted by setting the valve trip dogs. The back or stop position is adjustable in the same manner. In case of an emergency the pressing of the pushbutton station will start the unit in rapid reverse. When the starting position is reached the unit will automatically stop.

Units are furnished as standard with the following cycle:

Rapid traverse forward, first feed, second feed, rapid reverse to the starting position and stop.

A jump feed may also be furnished at an additional charge if desired. It provides a second rapid traverse stroke, interrupting the feeding stroke and making the following cycle possible:

Rapid traverse forward, feed forward, rapid traverse forward, feed forward, rapid reverse to starting position and stop; or—Rapid traverse forward, first feed forward, rapid traverse forward, first feed forward, sec-

ond feed forward, rapid reverse to the starting position and stop.

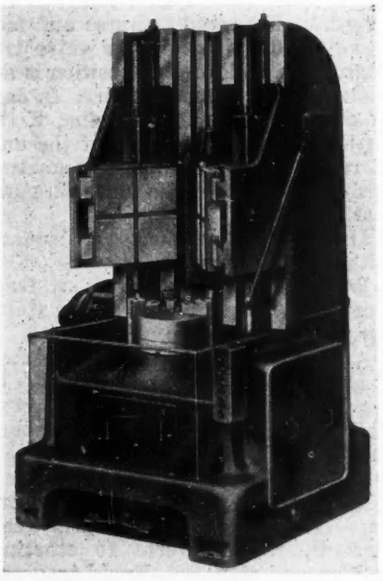
Motor drive ranges from 5 hp. at 1800 r.p.m. to 20 hp. at 1200 r.p.m. The size of the base ranges from 13½ x 35 in. to 24 x 70 in. Total weight with motor ranges from 1075 lb. for the small size to 3220 lb. for the largest.

Flex-Au-Mobility With 80 Speeds

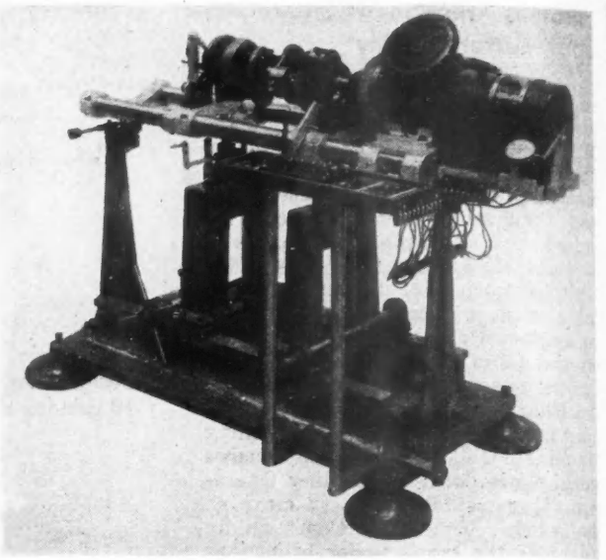
The first of a new line of machines based on Flex-Au-Mobility (Flexibility, Automaticity and Mobility) is the single-spindle, automatic vertical lathe, just brought out by The Bullard Co., Bridgeport, Conn.

The machine has been designed with three slides—two universal slides, each provided with swivel for angular cutting, and one plain vertical center slide, each of which is individually controlled by separate and independent feed works. These feed works are designed to give a total stroke of 20 in., and, for chucking work, the universal slides have a downward and inward movement, while the center slide has only a vertical movement. The application of tailstock converts this machine into a center turning lathe, when the universal slides may be changed to obtain an inward, downward, outward, and upward movement.

Each of the three heads is provided with 80 independent feed changes obtained by means of change gears in their respective feed works, and there are also 80 speed changes for the table, with a maximum of 800 r.p.m. In addition, there is a two-way clutch, automatically controlled during the cycle of the machine so that spindle speeds may be changed at a ratio of three to one, or a ratio of one to three from the basic spindle speeds.



Bullard single spindle automatic vertical lathe



Olsen - Lundgren electric spark static - dynamic balancing machine

Electric control is completely automatic during the cycle of the machine, but may be controlled independently by push buttons from the operating position. The main drive motor is 20 hp., 1800 r.p.m., and is direct connected as is the 3-hp., 1800-r.p.m. rapid traverse motor; while an independent ½-hp., 1800-r.p.m. motor drives the pump for the lubricating system.

The capacity of the lathe is 10 in. in diameter by 32 in. in height cutting with cross slides, and 10 in. in diameter by 36 in. in height cutting with center slides. However, there is a possible 18 in. diameter by 17½ in. in height swing in clear.

The compactness and ruggedness of this machine will be noted in the projected floor space of only 57 in. by 67 in. with a weight of approximately 11,000 lb. without motors.

Improves Machine for Static-Dynamic Balance

Some important and basic improvements have been incorporated in the design of the Olsen-Lundgren electric spark static-dynamic balancing machine which was first announced in *Automotive Industries* last year by the Tinius Olsen Testing Machine Co., Philadelphia, Pa.

One change calculated to facilitate production is the addition of the indicator at the right which shows directly the amount of compensating unbalance and permits reading without stopping the machine. Push buttons and electrical controls enable the operator to shift the compensating weight while the machine is running and thus permit him to determine accurately the amount and angle of unbalance in one setting.

In addition, the main dial indicator at the left of the head has been inclined to facilitate quick reading of unbalance at either end of the work.

The frame has been greatly improved as will be noted by comparing the illustration with the former construction. A gear and rack arrangement has also been added to provide a quick and easy setting of the machine for parts of different size. The vibrating rods are easily adjustable for the needed ranges of weight.

Automatic Transfer to Many Operations

The Baird Machine Co., Bridgeport, Conn., has placed on the market a multiple transfer press which answers requirements of transferring work to several positions after blanking for the purpose of piercing, forming one or more times, lettering, embossing, etc.

In operation the press automatically feeds the material from the coil, does operations preliminary to blanking, as piercing, lettering, etc., then cuts the blank, positively places the blank in the transfer fingers, positively transfers the work to the several other tool stations, and finally ejects the finished piece at high speed.

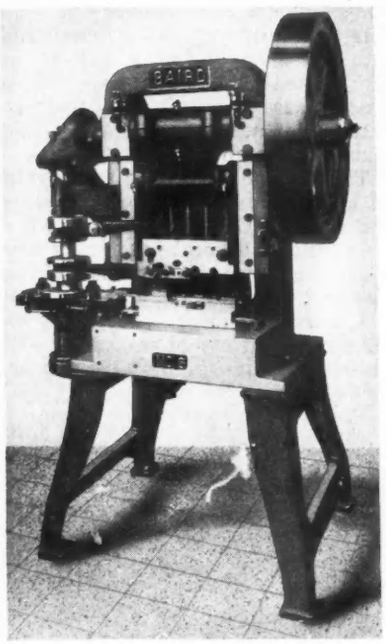
The feeding of the material is by a slide feed, the stroke of which, or amount of feed of material, is by means of a cam, and this feed has a screw adjustment, thus obtaining the finest degree of accuracy and in most cases doing away with the need for pilot pins and feed roll release. The grip of the feed on the metal is positive and operated by an independent cam and the pressure of this grip is adjustable.

The blanking punch enters the die only enough to cut the blank. The blank is securely held as it is carried down through the die into the transfer fingers by the blank transfer mechanism.

The multiple transfer mechanism positively carries the work to the several successive operations after blanking, and a point to note is that in each position the transfer fingers re-

tain a grip on the work until the forming or other tools take hold and the work is again gripped by the next transfer fingers before the tools let go. In this way the work is positively held and controlled at all times in its passage through the machine.

All of the punches or ram tools are contained in one punch holder and each is provided with independent



Baird Multiple Transfer Press

adjustment. All of the dies are contained in one die bed or shoe. Post tools are provided when Baird supplies the tooling. Each pair of transfer fingers is fitted to the shape of the work as it is to be carried by it and thus the work is properly and firmly held during the transferring.

Develops Rail Type Milling Machine

Kearney & Trecker Corp., Milwaukee, Wis., announces the addition of a rail-type milling machine to its present line. Many noteworthy features have been incorporated, among which are unusual rigidity throughout the entire construction, a drive to the spindles that reduces gear contacts to a minimum to overcome backlash, smoothness in operation to overcome vibration and chatter, versatility and ease of control.

The machine has been developed to use tungsten carbide cutters so that the utmost with this alloy can be obtained. However, it can be furnished with optional speed ranges basically suited for other forms of cutting metals.

The machine embodies the unit principle of construction and includes major assemblies consisting of a bed and table, two upright housings, a rail and a tieplate which connects the upper ends of the two housings.

Starting with the No. 2200 series as the smallest size, which constitutes a machine having a table 22 in. in width, the size of the machine is increased to the No. 4200 series having a table 42 in. wide. The intermediate series has a table 30 in. in width. All three series can be furnished with either 7, 9, or 11 ft. of longitudinal table travel.

Regularly four spindles are furnished, two of which are of the vertical type mounted on the cross rail, and the other two being of the horizontal type, one each mounted on the two side housings. However, two horizontal and one vertical spindle, or two vertical and one horizontal spindle, or other combinations, may be selected to suit specific requirements.

All spindles can be furnished either fixed or to swivel. If two vertical spindles of the swivel type are furnished, they may be swiveled 45 degrees toward each other, or 25 degrees away from each other.

Separate spindle speed-change gears, giving 10 changes of speed, and separate reverse gears, are furnished for each spindle, so that the speed and direction of rotation of each spindle is independent of any other spindle.

Any one of three spindle ranges can be furnished: 20 to 135 r.p.m. for use when cutting steel or cast iron with high-speed steel cutters; 50 to 350 r.p.m. recommended for milling cylinder blocks, crankcases, and other cast-iron work of a similar nature, using tungsten carbide cutters; and 75 to 500 r.p.m. for use when tungsten carbide cutters are to be used for milling aluminum. The highest speed range can also be used for some cast-iron and steel work when small cutters are used.

The machine is electrically operated. Four motors are used, all of which are controlled from a central panel located at the operating position at the side of the bed. For the No. 2200 series machines a 20-hp. motor of the flange type furnishes power for all spindles. A 5-hp. flange-type motor furnishes power for the table feed and table power rapid traverse. This 5-hp. motor is electrically interlocked with the 20-hp. speed motor when the control lever is in the feed position, that is the feed motor will be automatically stopped if the speed motor should stall or stop for any reason while the table is feeding.

A third motor is mounted on the tie rail at the top of the machine and furnishes power for raising or lowering the cross rail. A drum controller on the left-hand upright controls this motor. The fourth motor is furnished to operate a centrifugal pump when coolant is required.

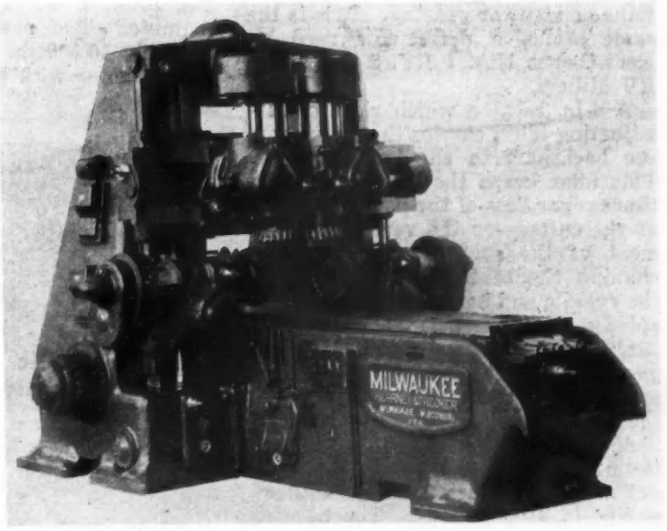
The table can be furnished with either one of two feed ranges, each of which has 18 changes: 1 to 40 in. per minute which is recommended when speed ranges of either 50 to 350 or 75 to 500 r.p.m. are used; and ½ to 20 in. per minute which is recommended to be used when spindle speeds of 20 to 135 r.p.m. are specified.

Variable Speed Double Spindles

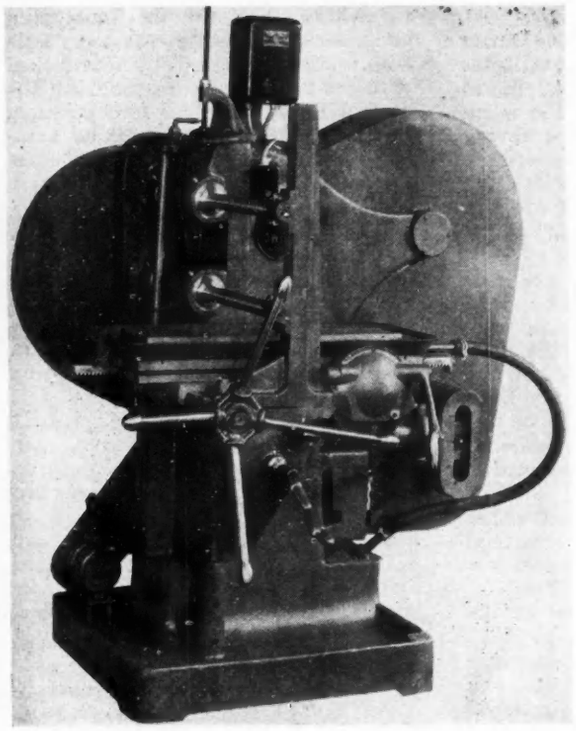
A combination of double spindles with variable speed drive are the outstanding features of a new milling machine developed by Kent-Owens Machine Co., Toledo, Ohio. The center distance between the spindles is adjustable over a wide range, which, with the variable spindle speed drive, fits this machine for handling a wide variety of operations. Further, proper adjustments in spindle speed and center distance to allow for cutter wear can be quickly and easily made.

Two standard ranges of spindle center distance are available, namely, 4¾ in. to 7⅝ in. and 5¾ in. to 9¼ in. Other ranges can be provided for special requirements.

Any 3 to 1 spindle speed range can be had with a minimum of 40 r.p.m. and a maximum of 457 r.p.m. using an 1160 r.p.m. motor; the standard speed range provided is 58 to 174 r.p.m. The spindles are No. 10 B & S.



Net weight varies from 28,000 to 42,000 lb. Kearney & Trecker rail-type milling machine



Kent-Owens milling machine

taper with 17/32 in. clearance hole through and are mounted on Timken precision taper roller bearings both front and rear.

The drive is carried from the motor to the backshaft by a Vee-flat belt. This belt rides on a plain pulley on the backshaft and between two opposed cones on the motor shaft. Movement of the motor toward the backshaft causes the Vee-flat belt to ride near the outer diameter of the cones, thus increasing the spindle speed; lowering the motor forces the belt to ride on a smaller diameter of the cones which decreases the spindle speed.

The motor is mounted on a vertical slideway and its movement up or down to effect speed changes is accomplished by a speed control handle conveniently located at the front of the machine. A spindle speed range of 3 to 1 is thus provided; this range is smooth and continuous and contains no steps or gearing. This is the same exclusive drive now used on Kent-Owens Nos. 1 RV, 2 RV and 3 RV Millers.

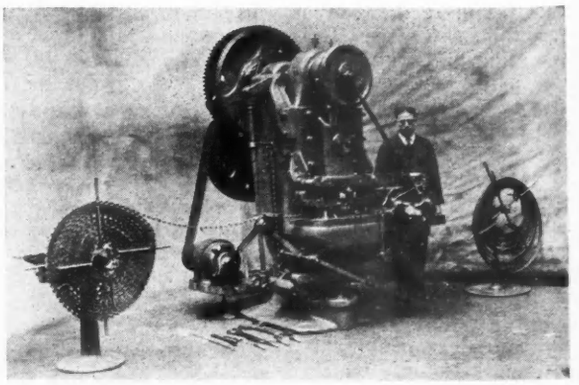
A 4-in. belt, on which rides a self-adjusting idler, carries the drive from the backshaft to the lower spindle. This idler keeps the belt tight at all times regardless of the power required at the cutter—or the vertical adjustment of the spindle, which slightly changes the center distance between the spindle and backshaft. The upper spindle is driven from the lower through two intermediate gears; these gears are adjustable to permit adjustment of the center distance between the spindles.

A 5-hp., 1160-r.p.m. motor is recommended for average conditions. The net weight of the machine, without motor, is 3100 pounds. The base is 28 in. in line with the spindles by 34 in. wide; the overall dimensions are 44 in. by 70 in.; the overall height is 70 in.

Chain Making by Press Method

At the request of a prominent chain maker, the Ferracute Machine Co., Bridgeton, N. J., has developed the press illustrated here for the manufacture of an agricultural type of chain. It is claimed that this press produces the chain at lower cost than any present method permits. Seven operations are needed to form a perfect link.

The press is a heavy duty unit with special dies for punching, scoring, shearing, and forming automatically fed strips 1⅜ in. wide by 3/32 in. thick, at the rate of 40 links per minute. The press weighs approximately 10,000 lb. and is driven by a 5 hp. motor with belt drive.



Ferracute chain press

Portable Electric Grinder

Rough, off-hand grinding, touching off parts, tools and dies, and varied grinding and sharpening jobs are said to be greatly facilitated with the new high-speed portable electric grinder announced by the Chicago Wheel & Mfg. Co., Chicago, Ill.

The Hand-ee Hi-Power Grinder is compact, well-balanced and light, yet powerful. With a suitable grinding wheel or cutter inserted in the chuck, this tool works at any angle, getting into and around corners, into irregular shaped holes and other hard-to-reach places. Grinding, polishing and cutting are accomplished with a minimum of time and labor.

Three grinding wheels are furnished with the tool, and over 100 shapes and sizes of Chicago grinding wheels are available to meet practically every need, thus providing a multiple-service tool at a low one-tool cost.

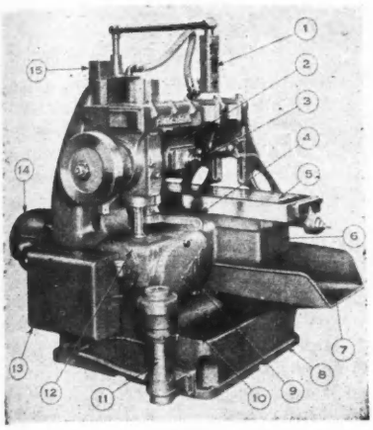
A universal motor provides power for a wide variety of work. The tool has a maximum speed of 17,000 r.p.m.

Cleans Air for New Finishes

The Double-Duty air filter made by the Independent Air Filter Co., Chicago, Ill., which was first described in *Automotive Industries*, May 16, 1931, has been adopted by a number of outstanding body plants concurrent with the adoption of synthetic resin finishes. It performs the double duty of supplying fresh air for the comfort of the workers as well as the function of supplying perfectly clean air so essential to the success of the finishing operation.

Since large volumes of air are used in the process, it has been found desirable to use a filtering method which is entirely automatic and arranged to provide a constant volume of air at unvarying resistance.

The outstanding feature of this filter is a pressed steel louvre-plate curtain mounted on a supporting shaft at the top of each unit. It dips, at the bottom, into a bath of oil where dirt that has been picked up is removed and where fresh oil is distributed evenly as the curtain is revolved slowly by its motor drive.



Sundstrand No. 3 Rigidmil

Standard Rigidmil Improved

As a result of designing, building, and following into successful productive operation a large number of Sundstrand No. 3 Rigidmils, the Sundstrand Machine Tool Co., Rockford, Ill., has developed certain improvements which would be desirable in a standard machine of this type. While some of these features have been used separately in special applications, it was not practical to adopt them as standard one by one. Eventually the number and importance of such features justified making a complete re-design, patterns, and fixtures, for the production of a new model which is called the 3-A.

Simpler than the No. 3 in some respects, with a still broader field of application, the 3-A Rigidmil may be obtained with low-speed, medium-speed, or high-speed heads; vertical or horizontal spindles, reciprocating or rotary tables. The 3-A Rigidmil lends itself with equal facility to special applications.

Among the outstanding features of the 3-A machine are: 1. Electrical control centralized in pendant which may be swung freely to any position most convenient for operator. Carries buttons for starting, stopping, "inching," quick stop or "plugging"; and switch for coolant pump motor. Cable enclosed in column. 2. New housing for spindle speed pick-off gears which have improved mounting for better operation and easier changing. Spindle speeds available through pick-off gears range from 25 r.p.m. minimum to 1150 r.p.m. maximum. Six gears furnished as standard equipment, others extra. Quick-change spindle speeds also available. 3. Pick-off gears for table feeds also have improved mounting. Six gears furnished as standard equipment provide feeds ranging from 4.63 inches to 51.40 inches a minute. Gears for low series of feeds, in seven steps from 1.64 inches to 4.14 inches a minute, available as extras. Quick-change feed box also available.

Direct Pneumatic Operated Air Clutches

A line of quick-acting, pneumatic operated clutches for use on Forging Machines, Presses, Bulldozers and similar equipment has been announced by The Ajax Co., Cleveland, Ohio. Although developed primarily for use on Ajax Forging Machines and the various types of hot metal working machinery this company manufactures, it is intended to market these clutches for initial equipment and replacements on all types of stop motion machines on which powerful, rapid and high frequency clutches are required.

With but slight modification of design through the substitution of a simple housing instead of the combination flywheel and pulley rim, these clutches become equally serviceable for purely power transmission applications such as connecting prime movers with line shafting, pumps, compressors and hoists where their smooth action, perfect balance at high rotating speeds and great torque capacity are major assets.

Ajax Air Clutches are of the usual multiple disk friction type, excepting that pressure is applied to the friction surfaces by introducing compressed air behind an annular piston acting direct upon the plates. There are no toggles, wedges, thrust collars, yokes or levers employed to transmit this pressure as it is self-opposed within the housing of the plates.

Air consumption is small, due to negligible clearance volume in the cylinder above the piston and the very short piston stroke, ⅛ in. on four surface, 3/16 in. on six surface clutches. This promotes extremely quick response both in engaging and disengaging, making it possible to stop and start in a very short interval of machine cycle.

In the case of stop motion machines, this valve is timed into the machine cycle and an air-released, spring-set brake stops the machine at open stroke. Sudden drop of air pressure or breaking of an air line will stop the machine at once, eliminating danger of accident from continued operation.

The instant response of the clutch to the operating valve makes it possible to "inch" slides for die setting. Yet the application of pressure to the friction plates during engagement is such as to give a cushioned acceleration to the driven parts of the clutch.

At present these clutches are manufactured in sizes with friction plate diameters of 18 in., 21 in., 24 in. and 30 in. with normal capacities ranging from 100 hp. to 1000 hp. per 100 r.p.m., but it is planned to build them in smaller and larger sizes as demands arise.

Makes 60 Strokes a Minute

A companion machine to the Cincinnati all-steel press brake, the all-steel shear introduced by The Cincinnati Shaper Co., Cincinnati, Ohio, offers to the metal working industry all the advantages of rolled steel plate construction. It offers an unbreakable steel frame combined with the universal feature of square shearing, notching, or slitting, at unusual speeds and with a high degree of accuracy. The shear is built with capacity for using four-edge blades. The machine illustrated here has a capacity for ⅜ in. steel stock, 12 ft. long.

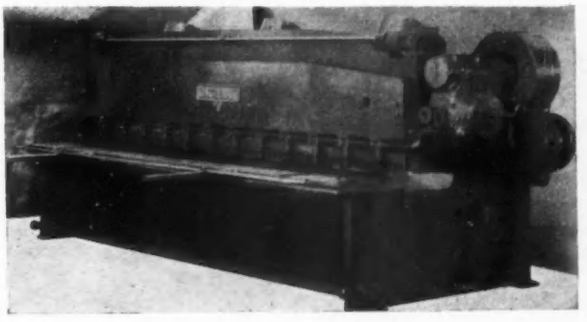
High speed is one of the outstanding features of the machine, being rated at 60 strokes per minute when cutting ¼ in. plate. Other features are: extreme accuracy, hydraulic holddowns, ball-bearing micrometer back gage.

The hydraulic holddowns deliver a heavy uniform pressure preventing sheet slippage regardless of variation in the thickness of the sheets. These holddowns are a series of independent plungers on 12 in. centers actuated by oil pressure which is developed by a cam on the eccentric shaft through an accumulator which both regulates the amount of pressure and acts as a relief valve.

The front gage can be set either parallel to the knives or at an angle. Extension arms are also furnished for the front of the bed which will carry both the sheet and the front gage beyond the width of the bed.

Heavy Compressor Fills Many Needs

The Alemite HR-25 (Model 5370), an air operated compressor built by the Alemite Corp., Chicago, Ill., has been nicknamed the "Rock Crusher," because of its ability to handle lubricants and various materials of heavy consistency. Widely used in automotive service stations and in mainten-



All-steel shear made by the Cincinnati Shaper Co.

ance operations by fleet owners, it has also found favor among production men in automotive plants.

Here are a few of the automotive applications:

To lubricate Tryon shackles during assembly at the factory.

To lubricate camshaft bearings.

On assembly lines for lubricating universal joints.

To fill the gear cases of the "No-Draft" ventilating system.

On assembly line to lubricate steering gears.

Caille Motor Co., manufacturers of outboard motors, employs this equipment to lubricate motor housings.

To seal core blocks—an instance where the "Rock Crusher" is used to handle a material other than lubricant.

Flexibility In Handling Equipment

An important addition to the wide range of manufacturing activities of The Osborn Mfg. Co., Cleveland, is the new line of overhead materials' handling equipment known as Osborn Tramrail Systems.

Osborn Tramrail Systems have been designed to meet practically every condition encountered in the installation of overhead materials' handling equipment. There are several exclusive features of design in the equipment for safe and quick overhead transportation of materials.

Idler for Any Position

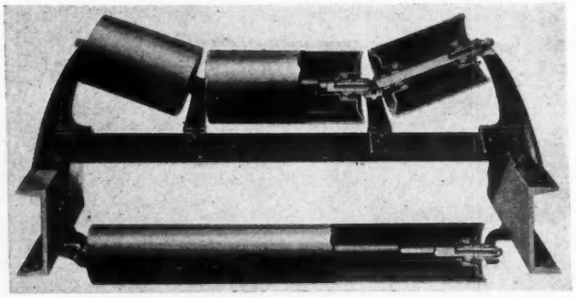
The Jeffrey Mfg. Co., Columbus, Ohio, describes in Bulletin 569 their line of Jeffrey Reliance belt idlers of universal application for troughing, picking belt, and flat belt requirements. Available in 4,- 5,- and 6-in. diameter rolls for belt widths up to 60 in.

The outer shells of the rolls are made of high quality steel tubing, with full thickness of wall throughout their entire length. Into these shells, steel ends are carefully centered and electric welded, virtually forming a one-piece balanced roll.

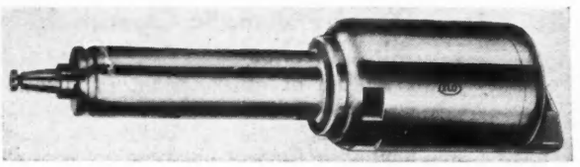
The ends are so designed as to give maximum strength and rigidity, as well as to deflect any dirt falling on their surfaces away from the center and from the grease seal.

The welded edges of the rolls are machine rounded to provide positive protection against injury to the belt.

Oversize Timken tapered roller bearings of the self-aligning type are used. These bearings provide a factor of safety far in excess of any overloading that might be imposed on the idler.



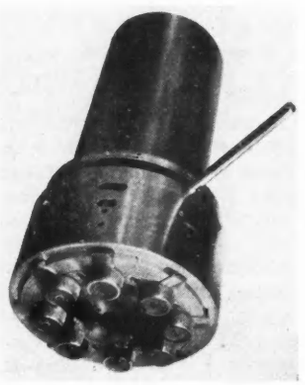
Jeffrey Reliance Belt Idler



Ex-Cell-O Inbuilt direct motor-driven spindle

National Acme Circular Chaser Cutting Tools

The constant trend toward a higher degree of accuracy in cutting taper threads on pipe and tubing, particularly in the oil industry, has made necessary the more accurate standards of the American Petroleum Institute. To meet these requirements in a commercial way the National Acme Co., Cleveland, Ohio, has produced a complete line of Circular Chaser Receding Taps from 4 in. to 13⅜ in., and a series of Expanding Dies also employing circular chasers from 1 in. to 13⅜ in. Larger sizes can be made on specification.



National Acme circular chaser receding taps

The fundamental idea of the circular chaser, which resembles a circular forming tool, is to present a large amount of steel back of the cutting edge, so as to carry away cutting heat, and afford rigid support to the cutting edge. This means that more threads can be cut for each grind of the chaser, and because the entire periphery of the chaser can be used without change in thread form, a great many more grinds are possible before throwing away the remnant of the chaser than is possible with any other kind of cutter.

Chasers of a certain pitch may be used on a wide range of diameters.

Motor-Driven Spindle for Surface Grinder

Ex-Cell-O Aircraft & Tool Corp., Detroit, Mich., announces a inbuilt direct motor-driven spindle as standard equipment for the new Monarch No. 2 surface grinder. Both spindle and motor are enclosed in a common body, forming a complete unit. The spindle is equipped with two Ex-Cell-O precision ball bearings that are especially developed for this type of service. On the front or wheel end of the spindle a water guard is provided which keeps water, dirt and other foreign materials from entering the spindle and causing the bearings to fail.

The motor is rated at one horsepower, 3500 r.p.m., 60 cycle, three-phase, 220, 440 or 550 volt, as required. Suitable ventilating openings are provided in the motor housing. An outlet box is located on the end of the motor to make the necessary electrical connections.

A New Type of Conveyor Chain

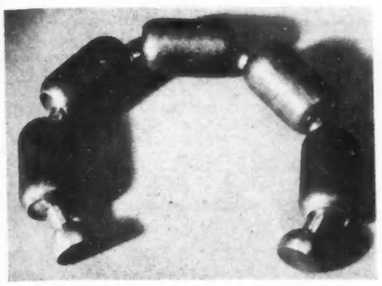
With this tubular chain, manufactured by The Lamson Co., Inc., Syracuse, N. Y., it is said to be possible to have a complete conveyor system on the same floor at exactly the proper working level. This conveyor will level out the peaks and valleys of the average conveyor system.

The conveyor is an all-steel chain of tubular form made up of seamless tubing of high carbon content. It is available in different pitches to meet requirements. It is extremely flexible both in application and operation. For instance, the 4-in. pitch chain will travel around a 6-in. radius. The connecting links, representing a dumbbell in shape, are turned from solid steel stock. The ends of the tube-shaped

links are swaged slightly to retain the ball part of the connecting link.

An ingenious arrangement securely connects each ten-foot section of the chain. The coupler link is made by cutting a regular link in half and then threading the inside of each half so that a plug is screwed into each half securely joining them.

This conveyor will make the necessary turns and modest inclines just as well as if it were one straight level line. Not only can the chain be flexed



Tubular Chain of Lamson Co.

in any direction, but it can be revolved about its own axis.

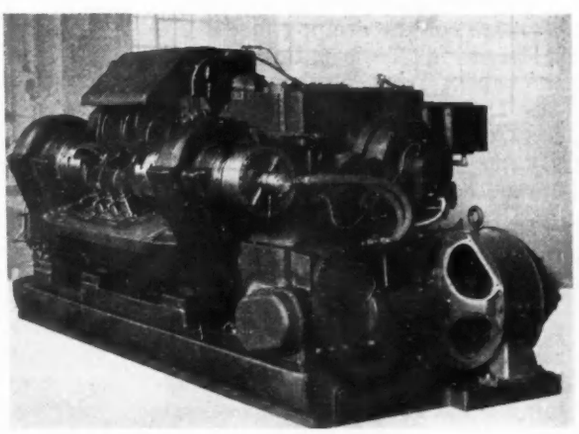
Due to the design, the line can be blocked without stopping the conveyor. The chain simply slips beneath the load and when the block is released the load starts traveling immediately.

A Crankshaft in 3½ Minutes

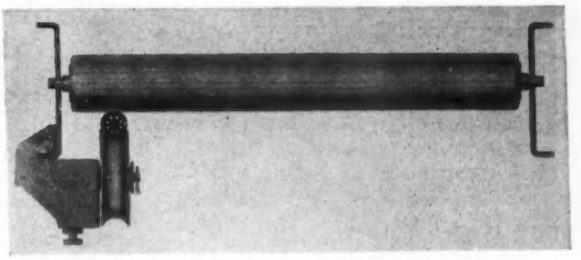
The second of the Crankshaft Machine Co.'s, Jackson, Mich., type B Melling crankshaft lathes has been installed in the plant of a large builder of straight eight engines near Detroit. The machine is designed for rough turning of pins and is set up to produce 17 pieces per hour. From the lathe the pins go only through a finish grinding operation.

The lathe weighs complete 57,800 lbs. All bearings are anti-friction type with 11 bearings on the mainshaft. Drive is of the double end variety with a 40 hp. variable speed DC motor and separate motors for feed and pressure lubricating systems. The lathe employs an angular table feed, the table being set at 11 deg. to the horizontal. Feed cams are ground in pairs and cam followers are held in contact by hydraulic pressure cylinders.

The machine is so designed that chips can be removed from the rear while the machine is in operation. Chucks and steady rests are hydraulically controlled. There is a lighting system above the work to illuminate all tools for continuous inspection. Supplementing a high pressure lubricating system there is a continuous flow light oil system from a hydraulic pump. Socket head cap screws are used throughout in the assembly of the machine.



Type B Melling Crankshaft Lathe made by Crankshaft Machine Co.



Lamson Uniframe Gravity conveyor

Live Roll Conveyors

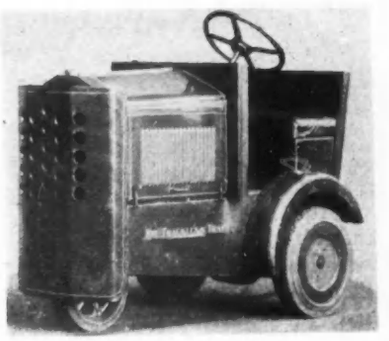
A live roll conveyor, which is said to do away with the inconvenience caused by having conveyors at varying grades, has been developed by The Lamson Co., Syracuse, N. Y. It consists of a Uniframe gravity conveyor to which the live roll feature is added. It is made in the four following types: horizontal, incline, decline, spiral. The latter is used for conveying loads upward between floors or downward from one floor to the next. This type of conveyor is very useful in retarding loads on down grades.

In detail, a multiple strand steel cable covered with rubber, which brings it up to one inch in diameter, transmits the power. This cable passes over idler sheaves of cast metal which are spaced to keep the rubber surface of the cable in contact with the rolls. A "kiss touch" is made which is sufficient to transmit the power, yet it permits the rolls to be stopped under load without damage by means of an automatic or hand-operated stop.

The illustration shows how the rubber-covered cable makes its "kiss touch" on the conveyor roll. It also shows how the carrying sheaves are easily clamped to the conveyor frame.

"Small" Gas-Powered Tractor

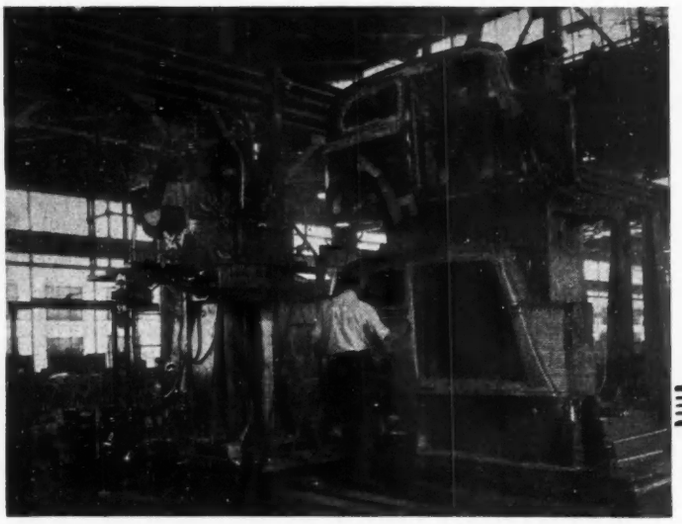
"Banty," the smallest gas-powered tractor in the Mercury line of industrial tractors made by the Mercury Mfg. Co., Chicago, Ill., has recently been announced. Among many important features are the combination of small overall size with ample power, and the fact that the tractor has full semi-elliptic spring suspension both front and rear.



Mercury "Banty" gas-powered tractor

Overall dimensions are: length, 73½ in.; width, 40 in., with a turning radius of 54½ in. Weight is 2700 lb., with provision for an additional 150-lb. front counterweight to be added for steep-grade operation. Maximum drawbar pull is 2000 lb., at a speed of 2.5 m.p.h. With a three-ton trailing load the "Banty" tractor will climb a 20 per cent grade at over 2.5 m.p.h.

"Banty" is powered with a four-cylinder Waukesha engine of 133-cu. in. displacement. It is an "L" head design, with enclosed valves, air cleaner, Delco-Remy ignition, thermo-syphon cooling, battery, generator, and self-starter, and a speed-limit governor. Engine, clutch, transmission, and rear axle are assembled as a unit, without drive shafts or couplings, giving an unusually sturdy and compact working mechanism.



PRODUCTION LINES

Production Lines of the Industry

View in tool and die department of the E. G. Budd Mfg. Co., Phila., showing one of the newest and largest Keller machines in use in the body building industry.

Although this department has had a battery of 12 Keller machines in operation, the rush of new die business for the 1934 building programs necessitated the purchase of another Pratt & Whitney Keller which was installed during the past month

Checks on Contours

It took a lot of time but Bausch & Lomb has finally come out with a well-illustrated manual on the applications of the contour measuring projector. The booklet not only tells the story of the machine but shows actual installations where the optical method is making good at precision inspection and gaging. Here's a chance to get hold of some good ideas. A copy of the book is yours for the asking.

Plated Chain

One of the bulwarks of the automobile chain drive industry has come out with a light conveyor chain designed to carry beer bottles to and fro. But it may have much of interest to those who handle small stampings, forgings, molded parts, and what not. The chain consists of standard roller chain with steel plates welded over each link. Can it be of use to you?

Leg Weary

Some say that plants are so big that factory executives are leg weary and gasping for breath before the day is over. But perhaps the most important point is that too much valuable time is lost in getting about. In some plants it is possible to save time and avoid fatigue by driving about in a small car. A rather novel suggestion is to install high speed conveyors for executives. Or maybe relocate the office so it's at the hub of things. If we're to continue with large plants, let's make it more comfortable for the executive and more efficient all around.

High Brow

Evidently the A.S.T.E. of Detroit is giving the psychology a good try. No doubt the idea is to leave tool engineering for the day shift — and think about other things of an evening. At least that's the impression we get after scanning the October program as published in the ASTE Journal. Feature for the evening meeting is a lecture on "Tools of Burglary" by an expert from Mosler Safe and Vault Co. Another feature is a lecture and movie on "The Great Muscle Shoals" by a real estate operator. Anyhow it's an idea.

On the Band Wagon

We too have a new car. But contrary to ideas expressed in current technical discussion, we like it immensely. However, there is something about this one and many cars in current production that seems inexcusable. It's the matter of rust-preventative finish. There is no reason why bright plating and other protective finishes should break down in the first rainstorm. When they do, we recommend a careful inspection of the way the metal surface is prepared prior to finishing. Anyway let's do what we can to produce finishes that stand up. It's not difficult to do it right.

Can't Be Denied

Although many were sure that operation under NRA codes would increase costs, no one was in a position to know just how much and in what fashion. Now we know. In one automotive parts plant which is cooperating, direct labor costs have gone up 30 per cent under the new deal. This was brought about by the reduction in working hours which necessitated the introduction of three shifts of six hours each. Besides direct labor costs, they find added costs due to the need of more gang leaders and the expense of providing duplicate tooling, something that we hadn't thought about at all.

Good Taste

Because we have been so close to the story behind the 1934 Studebaker, we examined with more than passing interest their four-page message in the recent S.E.P. We don't recall in any recent literature, a phrasing more lucid or more expressive in its simplicity than the slogan coined for the new line—"From the speedway comes their stamina From the skyway comes their style."—J.G.

Previous announcements briefly reviewed

Keeps Cutting Fluid Clean

Cleanness of cutting fluids used in grinders and other production equipment where surface quality is an essential is said to be secured with the special filter unit recently introduced by the Howard B. Morrow Co., Mishawaka, Ind. It is mounted on the machine with inlet and outlet vertical.

Internal Grinding With Two Wheels

An automatic internal grinding cycle with two wheels on a single spindle, designed to answer fine finish requirements, has been placed on the market by The Hea d Machine Co., Worcester, Mass. It combines the well-known features of the Sizematic and Gagematic principles.

Two different applications are described: one a set-up for removing large amounts of stock with a fine finish, the other a set-up for very fine finish necessitating a polishing operation on a connecting rod big end.

Collapsing Tap

A sensitive-tripping tap, known as Class PS, has been developed by the Geometric Tool Co., New Haven, Conn. This collapsing tap has been developed for two purposes: (1) To handle a wide range of work on shallow depth tapping; that is, short thread lengths; and, (2) to handle work where it is necessary to clear obstructions or projections at the bottom of the hole.

Solid Frames for Press Line

The No. 956 Verson press of 350-ton capacity, is typical of the new line of double crank presses with solid steel frames added by The Allsteel Press Co., Inc., Chicago, Ill. This line is built in a wide range of sizes and capacities.

Filter Cleans Cutting Fluid

In the interest of finer finishes for automotive parts production, the Fostoria Pressed Steel Corp., Fostoria, Ohio, has brought out a filter for cleaning the cutting fluid of production machinery such as grinders, screw machines, automatic lathes, etc. In normal operation, coolant is forced through the globe containing a special, non-metallic filtering material.

Casting Machines Cut Costs

Newton-New Haven Co., New Haven, Conn., recently introduced three types of die-casting machines designed and priced to compete with the common practice of using gated-patterns and sand castings for non-ferrous alloys.

Spray Coating Speeded Up

Large, flat products now can be spray-finished at an average rate of 200 sq. ft. per minute through the Transverse Spray-Coating Machine recently developed by the DeVilbiss Co., Toledo, Ohio.

In operation, the spray gun or battery of guns move across the material as it passes under the machine. The operation is similar to a hand-operated spray gun, except that a more uniform coating at a much greater speed is secured.

Two-Spindle Machine Provides Precision

A G & L No. 35-F horizontal boring machine has been added to the line of high power precision horizontal boring, drilling and milling machines manufactured by the Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.

On a column of massive proportions is mounted a two-spindle head providing a main spindle of 3½ in. diameter, running up to 500 r.p.m., and a high-speed auxiliary spindle with a speed range up to 1500 r.p.m.

Gettner Universal Striper

A striping tool for automobile bodies and other purposes has been announced by the K. H. Gettner Shop, Detroit, Mich. It comprises a precision grooved wheel mounted in a housing. When the tool is pressed against the work, the wheel recedes, thereby opening a valve which allows paint to flow to the wheel.

Process Timed With Automatic Switch

An electric timer that lends itself to a multitude of automatic and remote-control applications has been announced by the General Electric Co., Schenectady, N. Y. By combinations of two or more timers, or by using one in conjunction with other types of automatic time switches, it is possible to meet a wide range of process schedules.

Light Duty Drill Has Ball Bearing

Light duty, quarter-inch electric drill, equipped with ball bearings on both ends of the armature and with hand wound and formed coils has been brought out by the Independent Pneumatic Tool Co., Chicago, Ill.

Analyzes Furnace Atmosphere

A combustible gas analyzer, model RZA, for testing furnace atmosphere has been placed on the market by the Bacharach Industrial Instrument Co., Pittsburgh, Pa. The scale of the indicator is calibrated directly in percentages of combustible gases.

Speedway Announces Automatic Oilers

The Speedway Mfg. Co., Cicero, Ill., makers of Speedway portable electric tools, announces a line of automatic oilers. These are of two types: "Constant Level" and "Thermal."

Improved Goodyear V-Belts for Worthington Drive

A new Goodyear Emerald Cord V-Belt is being announced by Worthington Pump & Machinery Corp., Harrison, N. J., in connection with the Worthington Multi-V-Drive. Goodyear belts have been standard on this drive since its introduction.

Removes Odors At Low Cost

Positive odors are said to be removed at low cost from ventilating and air-conditioning systems, industrial systems, and special systems where recirculation may be employed, through the use of the Consolidated Odor Filter which has been placed on the market by the Consolidated Air Conditioning Co., New York.

Low Priced Dial Thermometer

C. J. Tagliabue Mfg. Co., Brooklyn, N. Y., announces a new five-in. dial indicating thermometer in a black bakelite case. This instrument was developed for equipment manufacturers who demand a moderately priced dial thermometer that stands up under severe operating conditions.

Wheel Dressing With Carboloy Tool

Carboloy Company, Inc., Detroit, Mich., announces a new grade—Grade 300—of diamond-impregnated truing tools for finish dressing. With this addition, the line now covers practically the entire range of finish dressing jobs. Each of the grades contains a specific type of diamond with grade 300 having the best quality stones to accommodate the more difficult dressing jobs.

Natco Six-Way Hole Driller

The National Automatic Tool Co., Richmond, Ind., has recently furnished a prominent automobile manufacturer a six-headed, special hydraulic feed driller arranged to drill the oil holes in a forged steel crankshaft. The machine is semi-automatic in operation, all heads being completely controlled by a single foot treadle.

Improves Eye Protection

The latest advances in eye protection for oxy-acetylene welding and cutting are said to have been embodied in the new Oxweld No. 15 welding spectacles and a new lens, Type AA, just announced by The Linde Air Products Company, New York, N. Y.

Progressive Type Production Unit

A progressive type production unit for facing and tapping automatically has been delivered by the Barnes Drill Co., Rockford, Ill. It consists of two, single-spindle units fitted with 4-spindle, heavy duty heads.

One unit is the new No. 2 Hydram machine, announced simultaneously, which has the hydraulic pressure feed applied directly over the spindle. The other is the Barnes, No. 242 standard self-oiling all geared tapping head. It is equipped with hydraulic remote control for the multiple disc clutches.

Surface Grinder Has Vertical Spindle

Gallmeyer & Livingston Co., Grand Rapids, Mich., is introducing a hydraulic feed vertical spindle surface grinder, model No. 3-V, featuring a cup wheel. Aside from miscellaneous tool room jobs, the machine can be used for grinding dies with guide pins in place. It is also suited for many manufacturing jobs such as, gear blanks, discs, washers, etc.

Gives High Reduction

Davis & Thompson Co., Milwaukee, Wis., has just brought out a line of planigressive speed reducers which provide a range of reduction ratios from 3:1 to 600:1. All the reducers are designed to use a standard NEMA motor without change.

Self-Contained Hydraulic Presses

A new edition of a familiar form of hydraulic platen press is introduced by The Hydraulic Press Mfg. Co., Mount Gilead, Ohio. This press consists of the regulation upward-acting type of press frame with its own individual hydraulic power plant.

Abrasives Coated Electrostatically

Electrocoated abrasives now being marketed by leading sandpaper manufacturers make possible considerable savings in both time and labor on all sorts of sanding, disk grinding and body finishing jobs in the automobile factory.

Guards Compressors From Scale and Dirt

Leak-proof air valve and oil filter attachment for double acting air compressors is being made by the Detroit Tool & Forge Co., Detroit, Mich. The Minard economy air valve is recommended by the makers where economy in air consumption is desired.

Will Show Fast Recorder

Vapocarb controlled atmosphere for Hump furnaces was just exhibited by the Leeds & Northrup Co., Philadelphia, Pa., at the A.S.S.T. Show. A Vapocarb-equipped Hump furnace has an atmosphere in which work is heated with no trace of scaling, pitting or decarburization. No packing is used.

A phenomenally fast recorder—the Speedomax—also was shown. This machine records the temperature of moving billets as they leave a heating furnace.

Rotary Spray Machine Has Large Production

Manufacturers of small and medium sized articles will be interested in the Type YBA and YBB rotary spray finishing machines, recently placed on the market by the DeVilbiss Co., Toledo, Ohio. The machines are capable of an approximate production of 1000-3600 small, light weight articles per hour.

Coyle, Curtice, Klingler and McCuen Are Made GM Division General Managers

BOP Disbanded as Corporation Returns to Traditional Decentralized Policy—Holler, Hufstader, Gilpin and Ralston Are New Sales Heads of Chevrolet, Buick, Pontiac and Oldsmobile Divisions Respectively

DETROIT — Abandonment of the BOP consolidated merchandising set-up and return to each one of the car divisions of its own sales activities is seen as one of the most important by-products of the internal reorganization of the General Motors Corporation. Starting with the appointment of W. S. Knudsen as executive vice-president with direct control over all passenger cars, engineering and sales sections, and all body manufacture, an entire rearrangement of individual divisions managements has been worked out.

With the resignation of I. J. Reuter, president, BOP Sales Co. and general manager of Buick and Oldsmobile, **Harlow H. Curtice,** recently president of the AC Spark Plug Co., has been appointed general manager of Buick and **C. L. McCuen,** recently technical adviser to Mr. Reuter, has been appointed general manager of Oldsmobile.

Harry J. Klingler, vice-president in charge of sales, Chevrolet Motor Co., has resigned that position to become general manager of Pontiac, a position made vacant by Mr. Knudsen's new duties.

Marvin E. Coyle, vice-president and general comptroller, Chevrolet, succeeds to the position of general manager of that division, formerly occupied by Mr. Knudsen.

Cadillac and General Motors Truck Co. are not affected by the reorganization. Buick, Olds and Pontiac administrative and sales offices are being returned to the respective factories.

F. S. Kimmerling, recently assistant to C. E. Wilson, General Motors vice-president in charge accessories division, succeeds Mr. Curtice as president of the A. C. Spark Plug Co.

Chevrolet's new general sales manager is **William E. Holler** who was formerly this divisions assistant general sales manager in charge of the eastern half of the United States. He joined the Chevrolet sales department in 1925 in a sales promotion capacity. Subsequently he became Los Angeles city sales manager, then Pittsburgh zone manager and in 1929 opened the Buffalo regional office. Prior to his connection with Chevrolet he was a prominent figure in the former Flint Motor Co.

Mr. Holler has named as assistant sales managers, **H. B. Hatch,** formerly assistant sales manager of multiple dealer points for Chevrolet, and **Felix Doran, Jr.,** formerly Chevrolet Dallas zone manager, in charge of the eastern and western parts of the country respectively.

D. E. Ralston, who has been with Chevrolet since 1918 and who has been assistant general sales manager since 1926, has been appointed Oldsmobile general sales manager. It is reported that **V. C. Havens** will continue in charge of Oldsmobile advertising.

W. F. Hufstader has been appointed Buick general sales manager, the position he occupied in the BOP set-up.

The Buick sales staff will include **A. H. Sarvis,** director of distribution, **R. H. Isreal,** sales promotion manager formerly with BOP, **C. C. Lewald** continuing as advertising manager, **A. C. Sellgren,** organization and analysis, **A. H. Belfie,** dealer accounting and management, **C. W. Jacobs,** service manager and **G. R. Scott,** parts merchandising and warehousing.

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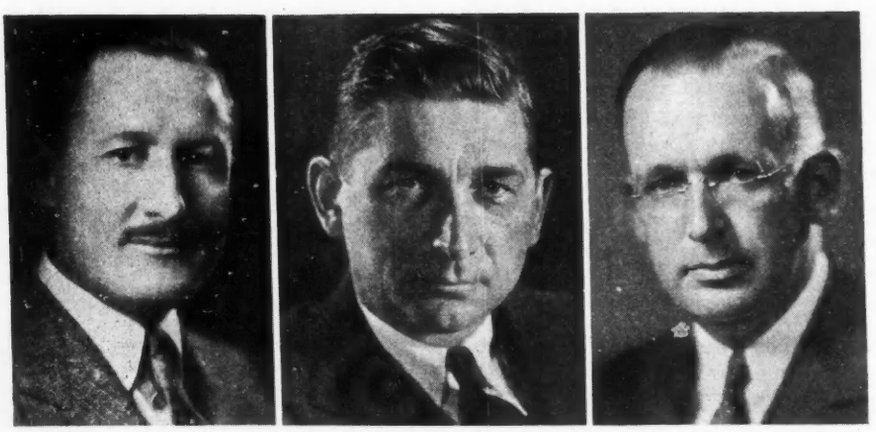


New G.M. car division general managers: H. H. Curtice, Buick; H. J. Klingler, Pontiac; C. L. McCuen, Olds

NE

NSPA Hears Hancock Defend Dual Assns.

Says Dual Organization Offers Best Protection Against Inroads of Other Forms of Distribution

CHICAGO—A spirited defense of the utility of the dual manufacturer-jobber association was a feature of the address made here at the National Standard Parts Association convention by President W. G. Hancock.

Denying that most of the practical accomplishments of NSPA had benefited either manufacturer or jobber, not both, he said:

"In a broad sense it has always been considered that the interests of manufacturers and wholesalers are mutual, that practical accomplishments that benefit one benefit the other, but more specifically that they strengthen and make more efficient our method of distribution in its competition with other methods after the same business.

"The most needed practical accomplishments are those that render more secure, more productive and more efficient our manufacturer-wholesaler method of distribution against the increasingly intensive competition of other methods of distribution, including the car factory method in the competition for business in our after-market field,

"While we are facing increasingly intensive competition from other distribution systems, I am convinced that at this time the greatest challenge to the efficiency and progress of our system comes from within. Our own distribution house is partially divided unto itself, the basic purpose of which, irrespective of fine words or fancy phrases, is aggression or defense.

"Wholesalers need strong manufacturer connections — manufacturers need the strongest possible wholesale outlets. Both should continue to cooperate in the preservation of each other and of their distribution system that provides their profits, through the medium of a dual association, which I repeat is the only satisfactory vehicle yet available for this purpose."

WS

Sales Slacken with Rural Areas Holding Pace Better than Metropolitan Points

October Domestic Car Sales Estimated at 121,000—Delays in New Model Programs Caused by Strikes Will Reduce Output in October—Used Car Sales Maintain High Level

By Athel F. Denham,
Field Editor, Automotive Industries

DETROIT.—The upswing in new passenger car domestic deliveries which took place around the middle of the month apparently has failed to hold, and during the past week sales have dropped off some 10 per cent from the rate current at mid-month. Indications now are that this publication's original estimate of around 121,000 passenger cars will be fairly close to the mark. The estimate had been revised upward some 5,000 units last week.

Retail deliveries are running very spotty. Generally speaking, rural districts are holding up better than metropolitan areas. This is particularly true with respect to commercial cars and trucks. Used car sales by most dealer organizations are holding up better than new cars and in many cases deliveries are at a higher rate than for new vehicles. Hudson dealers, for instance, report used car deliveries at present running around two to one compared with new cars.

According to present indications, production for the industry may show a slight decline from original estimates, due mainly to lack of production in new models which were scheduled to reach assembly lines this month. The tool and die makers' strike can be credited with much of the delay. As a result, some dealer organizations are running unduly low at the present time on new-car stocks and may anticipate a new-car shortage before the end of November. At this time it appears highly probable that shipments to dealers for November will total well below 90,000 units for the industry.

New-car deliveries by Hudson dealers week ending Oct. 21 showed a 28 per cent increase over same week last year.

Week ending October 21 Dodge dealers sold total 4230 units, an increase of 9 per cent over previous week. Total sales Dodge passenger cars to date amount to 73,104; Dodge trucks, 19,059 for the year.

Pontiac, Oldsmobile and Buick dealers all report an aggregate increase in domestic retail deliveries for second ten days as compared with first ten of October. Increase in the neighborhood of roughly 10 per cent for each of the three organizations.

September Sales Gain 77 Per Cent in Value

Commerce Department Issues First Report in New Fact Service

WASHINGTON, D. C. — Preliminary estimates of the value of retail sales of new automobiles, computed from number of cars sold, as reported by the National Automobile Chamber of Commerce, show an increase of 77 per cent for the past September over September, 1932, and a decrease of 14 per cent as compared with August of this year, according to Dr. Willard L. Thorp, director of the Bureau of Foreign and Domestic Commerce. This dollar volume amounting to 177 per cent of the previous year's figure, results from an 86-per cent increase in the number of cars sold and a 5-per cent decrease in the average price level. Prices during September of this year remained approximately the same as in August.

Dollar sales in August, 1933, as compared with August, 1932, showed an increase amounting to 84.7 per cent. This is the first time since 1929 that sales in these two months have compared favorably with the previous year. The August-September change is about the usual seasonal decline.

G.M. Earns $33,341,618

NEW YORK.—Net earnings of $33,341,618 after all charges are reported by General Motors for the quarter ended Sept. 30. This compares with earnings of $41,198,169 in the preceding quarter and a loss of $4,464,229 in the corresponding quarter a year ago.

Third quarter sales amounted to $178,967,035, as compared with $191,954,311 in the second quarter and $74,575,864 in the third quarter of 1932.

Net earnings in the first nine months were $81,409,794, against $10,555,175 in the same period last year.

Net working capital on Sept. 30 was $285,292,313, excluding balances in closed banks, against $240,411,639 a year earlier.

The Hupp Motor Car Corp. was 25 years old on October 26.

Simpson Will Administer Industry Codes for NRA

WASHINGTON, D. C.—NRA has been reorganized into four divisions for administrative purposes, each division to have a group of industrial codes to supervise. The automotive industry is in Division I, along with the extractive industries and shipping. K. M. Simpson, who presided at the APEM hearing, will be in charge of this division, with Messrs. Ammerman, Davis, Kemp and Peebles as deputies.

No Army Sales for Ford

WASHINGTON, D. C.—None of the $10,000,000 for army motorization will be spent with firms not under the Blue Eagle, which means, presumably, that the Ford Motor Company will not share in this business.

Harrisburg Meeting Fails to Agree on Truck Limits

State Representatives Will Meet in Smaller Groups to Study Size and Weight Rules

HARRISBURG, PA.—Official representatives from 17 northeastern States met here Oct. 20-21 to frame a uniform code of bus and truck sizes and weights, but failed to come to any agreement.

The net result of the Interstate Bus and Truck Conference, arranged at the request of the Pennsylvania State Legislature, was a decision that 17 States were too many to come to a uniform agreement all at once and that the conference should break up into smaller groups. This decision was incorporated in a unanimously approved resolution, which was as follows:

"Whereas it appears that sentiment and research have not been sufficiently developed to enable this conference to make recommendations governing the dimensions of trucks and buses throughout the area covered by this conference, therefore be it recom-

(*Turn to page* 536 *please*)

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

Uncertainty a Bar

Uncertainty was spread in business quarters last week by the evidences of dissatisfaction on the part of the farmers with the movement of agricultural prices, continued labor disturbances, and the disappointment in some quarters with the short-term effectiveness of the NRA. However, while general business showed some slackening last week, retail trade held up fairly well. The dollar volume of department store sales was about equal to that a year ago, and store chain sales maintained their gains of approximately 6 to 8 per cent above those a year ago. Wholesale business made a poor showing, although deliveries were well above those last year as a result of the heavy forward orders placed during August and September.

Distribution Holds Up

Department store sales in the metropolitan area of New York during the first half of October were 2.2 per cent below those in the corresponding period last year.

More Freight

Railway freight loadings during the week ended Oct. 14 totaled 664,058 cars, which marks an increase of 9,630 cars above those during the preceding week, an increase of 14,368 cars above those a year ago, but a decrease of 97,538 cars below those two years ago.

Chain Sales Gain

Sales of 20 store chains during September showed an increase of 5.7 per cent above those a year ago, which is the same percentage gain as that for the same store chains during August, as compared with sales in August, 1932.

Food Prices Up

According to the Bureau of Labor Statistics, average food prices in the United States increased 0.4 of 1 per cent during the period from Sept. 12 to Sept. 26. This advance followed a slight drop during the two weeks preceding.

Work and Wages

Employment in manufacturing industries in September was 3.2 per cent above the level in the preceding month, according to the Bureau of Labor Statistics, while there was an increase in payrolls of 2.7 per cent during that month.

Prices Lower

Professor Fisher's index of wholesale commodity prices during the week ended Oct. 21 stood at 71.5, as against 72.2 the week before and 71.1 two weeks before. The index for the week ended Oct. 14, at 72.2, was the highest for the year to date.

Credit Piles Up

The consolidated statement of the Federal Reserve Banks for the week ended Oct. 18 showed a decrease of $6,000,000 in holdings of discounted bills. Holdings of bills bought in the open market remained unchanged, and holdings of government securities increased $31,000,000. The reserve ratio on Oct. 18 stood at 65.5 per cent, as against 65.7 per cent a week earlier and 65.9 per cent two weeks earlier.

Salter Named Sales Head of Borg-Warner Service Parts

CHICAGO—William E. Salter, of Dallas, Texas, has been named sales manager of the Borg-Warner Service Parts Co. and will assume his new duties Nov. 1, according to an announcement by A. C. Darling, general manager.

Mr. Salter for 17 years has contacted jobbers in the Southwest. He has been Southwest district sales manager for the Borg-Warner Service Parts Company for more than three years. Previous to that time he was sales representative for the Warner Gear Company of Muncie, Indiana, a Borg-Warner subsidiary.

Mr. Salter will maintain his headquarters in Chicago, and will have charge of sales to 1500 jobbers in the United States and Canada.

Michigan Employment Up, Payrolls Down

DETROIT — Automobile employment in the state of Michigan during September totalled 191,504, compared with 186,610 in August and 137,858 in September, 1932. These figures are based on the reports of 94 companies and compiled by the State Department of Labor and Industry at Lansing.

Aggregate weekly payrolls amounted to $4,246,005 during September, $4,754,932 in August and $1,930,077 in September last year.

Average weekly earnings per capita were $22.17 in September, $25.48 in August and $14 for September, 1932.

Labor Board Reports on Edgewater Negotiations

Decision on Collective Bargaining Is Referred to Dearborn Home Office

WASHINGTON, D. C.—Results of a meeting held in the Edgewater Ford Plant Oct. 19 between company officials and the strikers' committee were reported to the National Labor Board by its representative, Gordon Wagenet.

The demands of the men regarding collective bargaining and wages, the Ford officials told the strikers' committee, would have to be referred to Dearborn for decision. Demands regarding longer time for lunch, Superintendent Neil Brown stated, had been granted the day of the strike when he had ordered installed a period of 45 minutes instead of 30 minutes for lunch.

On the demand for reinstating strikers without discrimination, the company took the position that they had applications from a certain number of strikers who would be given priority whenever there would be any work for anybody, this depending on receipt of production orders from Dearborn. The company agreed to withdraw their letter to strikers setting a time limit on their return.

While awaiting the reply of Dearborn on collective bargaining and wages the strikers' committee reported to the local NRA New Jersey Committee and to the National Labor Board's representative their dissatisfaction with the proposals as regards reemployment of strikers.

Of 2023 originally working the company say that 800 are on strike and the strikers claim 1200.

243 Exhibitors at Joint Trade Show

CHICAGO—Two hundred and forty-three exhibits will be revealed when the curtain rises on the Automotive Service Industries Show, Monday, Oct. 30, in the Merchandise Mart, Chicago. It will be the most comprehensive display of equipment, parts, accessories and supplies ever presented to the automotive maintenance trade of America, the management reports.

Rail Cut May Raise Other Steel Prices

Automotive Buying Gains Despite New Model Delays

NEW YORK—Conditions in the steel market as well as outside influences again bring the question of further price advances into the foreground of discussion. The reduction of about $2.25 per ton in the price of standard tee rails, which has been filed with the American Iron and Steel Institute, to become effective next Monday, it is thought in some quarters, will have on steel prices in general the very opposite effect from that which usually follows reductions anywhere along the line.

In other words, under pressure from the Coordinator of Transportation and the Recovery Administration, steel producers with rail mills have made a certain concession to railroads, and other steel consumers fear that they will have to pay that much more for their requirements to make up for this. The ninety-day trial period provided in the Steel Code expires Nov. 19.

Numerous further regulations and revisions are looked for to become operative then. Nor have announcements of impending price advances under code operation lost their effectiveness in "smoking out" business. Following announcement of lower discounts on bolts and nuts, raising prices by about 10 per cent, a good many specifications came in "under the wire," presumably for immediate shipment at the previously lower prices. And then, of course, there is the influence of inflation talk in general.

Although delays incidental to the perfecting of new models by automotive consumers continue to retard the coming through of much in the way of sheet and strip steel orders, some improvement is noted in the volume of specifications received this week by finishing mills.

Pig Iron—Dullness prevails in nearly all of the distributing markets, what buying by automotive foundries there is being almost altogether in single car lots. Prices are unchanged.

Aluminum—It was intimated in Washington despatches in the last few days that final adoption of a code by the aluminum industry could be expected this week. Market conditions remain unchanged.

Copper—It was generally recognized at this week's opening of business that President Roosevelt's radio address dealing with commodity values was the signal for copper prices to recover.

August Tire Shipments Under July but 77% Over Last Year

NEW YORK—Shipments of pneumatic castings in August were 14.4 per cent under July, but 77.3 per cent above August, 1932, according to the Rubber Manufacturers Association.

Production of pneumatic castings declined 12.6 per cent in July, but were 61.6 per cent higher than in August, 1932.

Manufacturers' inventories of castings increased 3.3 per cent over July and 6.2 per cent over Aug. 31, 1932.

The actual figures follow:

PNEUMATIC CASINGS

	Shipments	Production	Inventory
August, 1933	4,707,085	4,993,609	7,069,574
July, 1933	5,497,191	5,713,626	6,844,006
August, 1932	2,654,863	3,089,201	6,658,974

Fralick Appointed Midland Sales Head

CLEVELAND—L. J. Fralick has been appointed sales manager of the Midland Steel Products Co. He has been associated with Midland in both engineering and sales capacities since the early days of the company. Previously he was with the Hydraulic Pressed Steel Co.

Midland also announces that W. A. McKinley has recently joined its sales force. He was formerly in the company's service in engineering and sales work, but more recently has been associated with the Paterson Spring Co. and the Eaton Mfg. Co.

Canada Allows 25% Draw Back on Freewheel Units

Industry's Request for 60% Denied by Tariff Board

TORONTO — The new Canadian Tariff Board, in its first hearing involving the automobile industry of the Dominion, did not give anybody a break.

The Canadian Automobile Chamber of Commerce asked for a 60 per cent drawback in the duty on free-wheeling units imported for incorporation in automobiles manufactured in the country.

The Department of National Revenue made a counter-move in ruling that free-wheeling devices were not entitled to a duty drawback at all because such devices were virtually a part of the transmission and served as a clutch and, accordingly, were not eligible for the 25 per cent drawback which had been allowed since June 1.

The Tariff Board handed down its decision on Oct. 20 in which the appeals of both the automobile manufacturers and the Government Department were dismissed.

At the same time, the Board decided that the free-wheeling unit shall be entitled to a drawback of 25 per cent. The Canadian makers will, therefore, continue to receive a rebate of this percentage but not the 60 per cent which they sought at the hearing before the tribunal early in October.

An interesting point was brought out when representatives of the Canadian industry pointed out that free-wheeling devices were not made in the Dominion and, therefore, they did not desire tariff protection on this item which would be afforded if the Government did not provide a drawback.

Chrysler Earnings Are $11,937,683 in 9 Mos.

Third Quarter Sales Larger But Profits Decline Slightly Due to Increase in Expenses

DETROIT—Chrysler reports net income of $7,190,149 after all charges for the quarter ended Sept. 30, against net profit of $7,785,616 in the preceding quarter and a deficit of $5,346,146 in the corresponding 1932 quarter.

In the first nine months of 1933 earnings were $11,937,683 against a deficit of $6,226,578 in the same period last year.

Sales in the nine months period were $202,061,415, a gain of 82 per cent over last year. Third quarter sales were $77,290,212 as compared with $81,711,714 in the second quarter, an increase of 7 per cent. Cost of sales increased from $69,068,461 in the June quarter to $71,459,610 in the September quarter, a gain of 6 per cent. Expenses, however, increased from $3,432,984 in the second quarter to $6,737,856 in the third quarter, thus accounting for the somewhat smaller third quarter profits, despite the rise in sales.

The balance sheet as of Sept. 30, shows current assets of $92,199,061, including cash $31,972,202 and marketable securities $29,643,298. Current liabilities were $27,469,048, leaving working capital of $64,730,013 against $59,365,721 at the end of September, 1932.

The corporation's unit sales were 387,266 in the first nine months of 1933 as against 174,530 in the same period last year. Third quarter sales were 169,652 as contrasted with 31,906 a year ago.

"Herb" Smith With Kellogg

ROCHESTER, N. Y.—The Kellogg Manufacturing Company announces the appointment of Herbert M. Smith as director of sales and Jack Sharp as sales manager, taking effect immediately. Both of these gentlemen are well known to the trade through their long association with the Manley Manufacturing Company, York, Pa.

Anderson Succeeds Smith

YORK, PA.—C. A. Anderson, formerly with the Wright Manufacturing Company, division of the American Chain Company, has been appointed manager of the Manley Manufacturing Company, succeeding H. M. Smith, who resigned.

Reo Loss Reduced

LANSING—Reo net loss in the third quarter was $315,649 against loss of $638,870 in the corresponding 1932 quarter.

G.M. Reverts to Traditional Organization Plan but Centralizes Supervisory Control in Knudsen

New Set-up Seen as Stimulating Competition Among Car Divisions While Retaining Many of the Advantages of Consolidated Operation-Dealer Policies Not Detailed

DETROIT—A decision virtually completely to reverse General Motors' car merchandising policies in effect recently, is seen as a major factor behind the reorganization of operating forces now in process within the Corporation. Whereas during the past 18 months the fundamental policy has been one of retrenchment, the new set-up quite possibly will result in expansion not only of factory and field personnel but also of dealer organizations.

In effect, as Mr. Sloan stated in a general release last week, G. M.'s present move is in line with the Corporation's traditional policy of decentralized operations. Judging from Mr. Sloan's statement it apparently is the opinion of executives of the corporation now that individualized operations and merchandising campaigns will result in sufficiently large increases both in percentage of price classes and of the industry for the separate car companies, more than to offset any increase in costs which may be involved in the move.

Fundamentally the new set-up is a return to G. M.'s car policies before formation of the BOP and before the combination of factory production and engineering supervision (Buick and Olds under I. J. Reuter; Pontiac and Chevrolet under W. S. Knudsen).

There is a marked difference however. Prior to April, 1932, each car company was not responsible directly to any one individual in Detroit. While some correlation was established among sales departments through R. H. Grant, vice-president in charge of sales, and some engineering coordination under O. E. Hunt, vice-president in charge of engineering, no sharply defined lines of authority existed.

Today under the new set-up W. S. Knudsen, if we interpret Mr. Sloan's announcement of his appointment correctly, is in complete charge of all activities relating to the car units and Fisher Body Corporation. Under such a set-up a degree of coordination of activities can be obtained which would have been impossible under the method of decentralized operations in effect prior to April, 1932. The accompanying organization chart gives an idea of the organization as it appears to have been established.

Virtually it represents a decentralization of functions by individual companies with a centralization of supervisory control. Such a central control seems to be demanded by today's condition. Take sales for example:

With the formation of the BOP Sales Company many dealers were weeded out of the General Motors organization in order to provide a living for the remaining outlets by combinations of franchises. This combination, particularly in respect to Buick-Pontiac, and Oldsmobile-Cadillac duals has proven highly successful, both from the dealers' and the factories' points of view. A continuation of such set-ups where potential does not warrant splitting up of franchises seems to be indicated as probable, and Mr. Knudsen has publicly stated that such combinations would be continued. A coordination of supervision therefore is desirable.

More important however are the questions of engineering and production. In recent years there has developed in the corporation a degree of interchangeability of some parts on different cars which has never before been approached by G. M. The economies resulting therefrom by avoidance of duplication of effort and equipment would stand a good chance of being lost in a complete decentralization of activities of the car and body companies. In his capacity as executive vice-president of the corporation in charge of all these activities, Mr. Knudsen can provide the necessary control over and insure the necessary cooperation between engineering and production departments of the various units.

Returning to sales once more, little is available as yet as regards operating policies. Primarily it seems evident that an increase in dealer organization is indicated for some units, by expanding into territories in which the potential has increased materially during the past few months.

Whether or not field operatives contacting dealers will represent several lines of cars or a single line has not been disclosed. Here again dual franchises, particularly Buick-Pontiac combinations present an interesting management problem under a decentralized set-up.

Under the BOP Sales Corporation, distribution of all parts for Oldsmobile, Buick and Pontiac were centralized under one management and under one routing through the use of centralized warehouses. Service department management presumably will return to the individual units under the new plan, but whether the same will hold true for maintenance of factory parts stocks in the field has also not been disclosed. This represents a particularly interesting question in view of the fact that only in the last month or so, Chevrolet and BOP parts warehouses have been consolidated. Parts distribution management however was maintained individually by Chevrolet and BOP.

It must be remembered however that in the foregoing there is a good deal of supposition, which may be invalidated by future developments and forthcoming announcements of policies. It merely seemed to us, editorially, that the changes within the Corporation were of such far reaching interest as to warrant some discussion here even though accurate information on all actual plans is not yet available.

Harrisburg Meeting

(*Continued from page* 533)

mended to the various State Legislatures that arrangements be made for properly constituted and authorized delegates to be appointed to conferences of smaller groups of States under the direction of the American Legislators' Association."

Following the adoption of this resolution an effort was made to arrive at a definite decision on a uniform code. Henry W. Toll, executive director of the American Legislators' Association and chairman of the conference, took the position that delegates already assembled were "properly constituted and authorized"; that they had assembled at taxpayers' expense at a time when economy and speed of action were important consideration; and that therefore the thing to do was "to act, not six months or three months hence—but now." Accordingly, he divided the 17 States into groups and they went to work at once.

The effort was futile so far as the uniform code was concerned. The New England groups, consisting of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, asked the American Legislators' Association to call a regional meeting at an early date of duly appointed officials empowered to make agreements as to dimensions and weights of vehicles, and report back to their respective legislatures. New York, Pennsylvania, New Jersey and Delaware took similar action. Virginia, West Virginia, Delaware and District of Columbia decided that they could work things out without a conference. Middle Western representatives from Ohio, Indiana, Illinois and Michigan decided to invite additional States into conference and requested the first Legislature in session in the region to invite these four States and, in addition, Kentucky, West Virginia and Wisconsin into a regional meeting.

Before adjournment the delegates took with them suggestions, framed as resolutions, that "it is the sense of this conference that there is a tendency toward a reduction of lengths and widths rather than an increase," and that "the interest of taxpayers and private non-commercial motorists must be recognized as paramount in determining the dimensions and weights of motor vehicles."

Coyle, Curtice, Klingler and McCuen Are Named G.M. Division General Managers

(*Continued from page* 532)

Mr. Klingler has appointed **A. W. L. Gilpin,** former Chevrolet regional manager of St. Louis, as general sales manager of Pontiac. Under Mr. Gilpin, **R. K. White,** Pontiac sales manager in BOP setup, and **C. P. Simpson** will function as assistant general sales manager. Mr. Simpson was Chevrolet zone manager at Houston, Tex. Other Pontiac appointments include **R. H. White,** advertising manager, **W. R. Huber,** sales promotion manager, **A. C. S. Olsen** in charge of dealer accounting, **R. T. Gundry,** car distribution manager, and **E. S. Grumbache,** budget manager.

A. H. Bartsch, recently service and parts manager for BOP, has been named parts and service manager for Pontiac.

In appointing the new general managers, Mr. Knudsen stated that present dual franchises would not be disturbed, specifically mentioning Buick-Pontiac combinations.

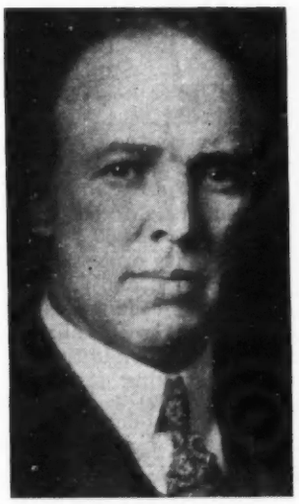
In commenting upon the appointments by Mr. Knudsen, a release from Mr. Sloan's office in New York states that separate division identity and executive responsibilities incident to the same have always been a fundamental principle in its administrative policy. The statement points out that the formation of the BOP company was because of sharp contraction of volume incident to the period of depressions for reasons of economy. Reestablishment of the corporation's former plan of operations is justified by the improved outlook, Mr. Sloan's statement says. The statement also announces with regret the resignation of I. J. Reuter.

H. J. (Harry) Klingler is too well known to the industry generally to need introduction here. He came to Chevrolet 10 years ago as zone sales manager in St. Louis. He has been vice president in charge of sales of Chevrolet since May, 1929. The two years previous to this he had been assistant to R. H. Grant who occupied the same position and resigned it to take the position of vice president in charge of sales, General Motors Corp. He is 44 years old.

Harlow H. Curtice is a new figure in passenger car sales circles but he has been well known in recent years in the service branches. He joined A. C. Spark Plug Company in 1914 as an accountant and has been with A. C. continuously since that time. In 1923 he became assistant general manager of A. C., in 1927 vice president, and in 1929 was elected to the presidency. Mr. Curtice, like Mr. Klingler, is a native of Michigan. He is 40 years old.

Charles L. (Mickey) McCuen, who becomes general manager of Olds Motor Works, has been probably more responsible than any other single individual for the rise of Oldsmobile in recent years. It was he who designed the F series, introduced in 1928, just about a year after he joined the company, which car marked the beginning of recovery for Oldsmobile under the guidance of Mr. Reuter.

A. C.'s new president, F. S. Kimmerling, joined Remy Electric in 1916, becoming production manager in 1921 and assistant factory manager of Delco Remy in 1928. In 1929 he was named president of Guide Lamp Corp. while in January of this year he became assistant to Mr. Wilson.



A. W. L. Gilpin, Pontiac salesmanager

GM Sets Dates for Earnings Statements

NEW YORK—Preliminary quarterly earnings reports of the General Motors Corp. hereafter will be issued on the twenty-fifth days of April, July and October, according to an announcement this week by Paul Willard Garrett, director of public relations. Complete quarterly statements will be available on the tenth days of May, August and November. These dates will be adhered to except, of course, where holidays interfere.

Yellow Reports Profit In Third Quarter

PONTIAC — Net sales of Yellow Truck & Coach Manufacturing Company for the three months ended Sept. 30, 1933, were $4,941,792. Net profit after provision for depreciation was $40,262. In the three months ended Sept. 30, 1932, the company reported a net loss of $1,050,822. Net sales for the nine months ended Sept. 30, 1933, were $12,081,498. Net loss after provision for depreciation was $1,148,069. In the nine months ended Sept. 30, 1932, the company reported a net loss of $2,343,919.

Cleveland Diesel Tractor

CLEVELAND — The Cleveland Tractor Company is in production on a Diesel-powered crawler tractor.

Olds salesmanager, D. E. Ralston

Buick salesmanager W. F. Hufstader

Chevrolet salesmanager W. E. Hollen

AC president, F. S. Kimmerling

Inclusion of Car Makers' Parts Distribution in Automotive Jobber Code Draws N.A.C.C. Fire

Also Object to Price Fixing Provisions as Does National Retail Dry Goods Association—Code Would Regulate 5000 Wholesalers Claimed to do About 68 Per Cent of Business

WASHINGTON, D. C.—The proposed code of fair competition for the wholesale automotive trade, on which public hearing was held here on Oct. 21, drew the fire of the National Automobile Chamber of Commerce and the National Retail Dry Goods Association, as well as the usual protests from labor.

The code was submitted by Sidney R. Dean, chairman of the NRA administrative committee for the wholesale automotive trade. In addition to establishing hour and wage standards, the code seeks to control competitive conditions among some 5000 automotive wholesalers who, it was asserted, do approximately 68 per cent of the dollar volume of wholesale business. It was claimed that about 2000 of the 5000 wholesalers affected by the code were members of the various national wholesale associations represented on the code committee. As presented at the hearing, the code would also cover wholesale functions performed by car and other automotive manufacturers.

Exception to the inclusion of wholesaling by car manufacturers was taken in a brief filed for the sales managers committee of the N. A. C. C., which committee is headed by R. H. Grant, vice-president of General Motors. The brief said that the automotive wholesale business of automotive manufacturers represents a very substantial share of the whole business. In 1932, parts sold by vehicle makers were valued at $140,500,000. The brief continued that the automotive manufacturers have not been a party to the formulation of the wholesale code despite their material interest in its provisions, nor are they members of any of the associations submitting the code. The first test of the code, it was contended, was whether its proponents were truly representative of the wholesale automotive trade.

The N. A. C. C. brief also pointed out that its distribution organization had to carry fast as well as slow-moving parts and consequently exception was taken to the definition which describes a wholesaler as one who carries an inventory enabling him to supply the reasonable demands of the trade. The clause of the code barring coercion also was attacked as aimed at the practice of car makers of entering into contracts with their dealers calling for exclusive handling of genuine parts. The price fixing provisions of the code also were objected to on the ground that the motor car maker buying parts from an independent maker would be subject to the latter's list prices, while the motor car maker producing his own parts would not, thereby conceivably creating a competitive advantage. It was also asserted that another effect of the price-fixing provisions might be to limit discounts on parts to car dealers thereby making it impossible for them to compete with jobbers for the business of other dealers and service stations. Criticism was also directed at the clean-up provisions of the code, it being held that the code authority should be required to take into consideration the effect upon both the independent jobber and the wholesale outlet of the car maker.

The National Retail Drygoods Association, as users of 250,000 motor vehicles, directed its protests principally against sections B and C of Article 5 in the wholesale code which are, generally speaking, the price fixing provisions of the code. In addition to opposing any price fixing provisions, The National Retail Drygood Association particularly demanded the elimination of that part of the code which gave the Administrator the power to prescribe terms and conditions under which a wholesaler might have the right to contract with a manufacturer to observe the resale prices of the branded or trade-marked merchandise of such manufacturer. In attacking this provision of the code The National Retail Drygoods Association pointed out that it might reasonably be expected to compel great retail institutions, like Macy's or Wanamaker's, to pay more for the parts and accessories bought and used by those institutions than the single retail outlet, small as it might be, of a chain store operator.

The hearing was conducted by Deputy Administrator Amnerman. Ray Sherman, vice-president of Automotive Merchandising, sat as Industrial Adviser.

Streamlined, wooden dummy model of a rear-engine car exhibited by Briggs at the Ford Exposition of Progress. John Tjaarda is the designer of the job which seats three in the front seat and two in the rear

NRA Settles Young Radiator Strike

MILWAUKEE—The most important test to which NRA enforcement agencies in Wisconsin have so far (Oct. 16) been subjected resulted in a complete victory for the recovery officials in settlement of the strike of 155 employees of the Young Radiator Co., Racine, Wis. Eight employees had been discharged because of inefficiency, the company contended, but the strikers insisted they lost their jobs because they had attempted to organize a shop union. The strike was settled on the terms laid down by Dr. E. A. Fitzpatrick, State recovery administrator, with the company taking back the six men and two women discharged and the strikers agreeing not to press their demands for higher wages. These demands were made after the original settlement, and the strikers were subjected to severe censure by Doctor Fitzpatrick. In announcing the settlement he said he was aided greatly in effecting it by Paul J. Smith, a representative of William Green, president of the American Federation of Labor, who "helped in getting the union to see the light," as he put it.

Hupp Loss Reduced

DETROIT—A net loss of $1,196,131 for the nine months ended Sept. 30 is reported by the Hupp Motor Car Corp. This compares with a loss of $3,405,190 in the similar 1932 period. Net sales in the first nine months were $1,537,804 against $1,041,152 last year. The Sept. 30 balance sheet shows current assets $6,191,144 including cash $2,144,538 and government bonds $2,320,890. Current liabilities were $1,191,116. The balance sheet shows working capital of $5,000,328 as compared with $6,209,287 Sept. 30, 1932.

B-W to Open Toronto Warehouse

CHICAGO—The Borg-Warner Service Parts Company will open its first Canadian warehouse in Toronto by Jan. 1, 1934, it was announced here today.

Machine Tool Orders Herald Better Times

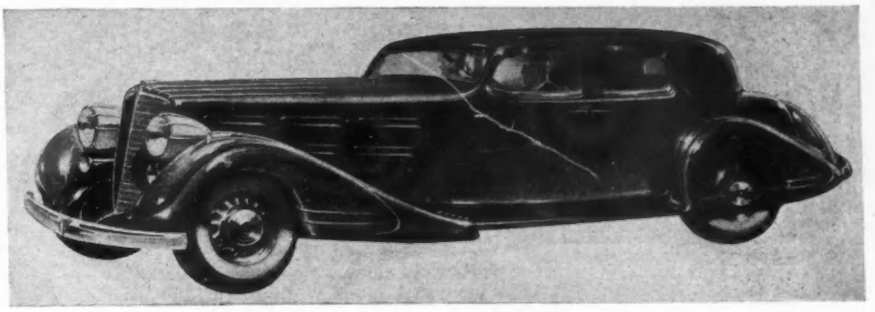
Warner & Swasey Chart of Daily Volume Trend Parallels 1922 Pattern

CLEVELAND—If history repeats itself, the current trend of machine tool orders definitely presages the advent of a general business recovery, according to statistics prepared by the Warner & Swasey Co., Cleveland, makers of machine tools and precision instruments.

The company's chart of average daily number of orders, thus far in 1933, is almost identical to the chart for 1922. Both charts show volume of orders starting from a low point, moving upward in the second quarter, and rising sharply in the third quarter. The rate of increase is practically identical in both cases.

In 1922, volume of orders continued to move upward for the balance of the year, and led into a substantial improvement in 1923, shared by almost all lines of business.

"The deferred demand for machine tools today is larger than was the case at this time in 1922," says Philip E. Bliss, president of the company. "In this depression, orders remained at the bottom for two years, as compared to only one year in the 1921 depression, indicating that even more equipment is in need of replacement or repair than was the case at that time. In addition, new inventions and improvements in the last few years have rendered many old machine tool models obsolete."



Nash Ambassador Eight. The rear wheel cover plates are optional

$25,000,000 Allotted for Military Planes and Autos

WASHINGTON—An allotment of $15,000,000 for airplane construction for the army and navy and $10,000,000 for motorization of the army has been made by the Public Works Administration. The army had asked for a greater sum for motorization and is expected to renew efforts for a larger allotment. The $15,000,000 for airplane construction also was unsatisfactory to both the army and navy. The division of the total will be decided upon at a meeting of a joint board of the War and Navy Departments. Naval officials say that with construction of more than 40 ships under way or ordered, the navy will need about 400 airplanes, estimated to cost $15,000,000.

The new allotment to the army for motorization supplements one made recently and will be used in connection with its program to substitute motor power for animal power. Motorization of cavalry units is well under way. The army has not made known its plans for motorizing its infantry, artillery and supply trains.

Production of 270,545 Units in Fourth Quarter Will Put Industry over 2,000,000 Mark in 1933

WASHINGTON, D. C.—September production of motor vehicles in the United States and Canada totaled 201,890 against 242,566 in August and 86,492 in September, 1932. The decline from the preceding month amounted to 17 per cent, and was somewhat more than seasonal, but the increase over last year was 132 per cent.

For the first nine months production was 43 per cent ahead of the similar 1932 period, and 21 per cent ahead of last year's 12-month total. If the decline in output during the fourth quarter is of no more than usual seasonal proportions, production for the year will approximate 2,050,000 units.

Canadian output amounted to 5808 units in September of which 4358 were cars and 1450 trucks. The total compares with 6079 units in August and 2342 in September, 1932. United States September production was 196,082 consisting of 160,900 cars and 35,182 trucks, compared with 236,487 units in August and 84,150 in September last year.

For the first nine months, United States production was 1,672,767 against 1,370,678 last year while Canadian volume amounted to 56,689 this year as compared with 53,550 in 1932.

Seasonally adjusted indexes of total motor vehicle production in the United States and Canada follow:

	1933	1932	1931
January	51	47	68
February	35	39	73
March	32	32	73
April	44	36	83
May	54	46	78
June	71	51	70
July	73	36	68
August	76	29	60
September	69	29	49
October	..	19	31
November	..	32	36
December	..	63	71

A comparative summary of production follows:

	Total	Cars	Trucks
9 mos., 1933..	1,729,456	1,447,759	281,697
9 mos., 1932..	1,208,616	1,011,830	196,786
Sept., 1933...	201,890	165,258	36,632
Aug., 1933...	242,566	200,063	42,503
Sept., 1932...	86,492	66,489	20,003

Labor Cost Goes Up 15 Per Cent in September

Employment Increase 4 Per Cent Over August Despite 17 Per Cent Loss in Output

WASHINGTON, D. C.—The automotive industry's labor costs in September, the first month of operation under the "Blue Eagle," were up 15 per cent per unit produced from August. Employment per unit produced was up by an even larger amount, 25 per cent, due to the work-spreading effect of the shorter hours. The indications of the effects of NRA on the industry are deduced from the Federal Reserve Board indexes.

September employment was 4 per cent larger than in August, despite a 17 per cent decline in production, while payrolls decreased only 5 per cent. Pay per automotive worker was down 8 per cent, reflecting both the lower production and the shorter hours. A summary comparison follows:

Unit production	—17%
Employment	+ 4
Payrolls	— 5
Pay per worker	— 8
Employment per unit produced	+25
Payroll per unit produced	+15

	Sept., 1933	Aug., 1933	Sept., 1932
Automobile production	56	61	24
Automotive employment	61.5	59.7	43.0
Automotive employment*	63.4	60.9	44.3
Automotive payrolls*	50.1	52.5	22.2
Industrial production	84	91	66
Factory employment	74.3	73.3	60.3
Factory employment*	76.6	73.4	61.5
Factory payrolls*	57.6	55.7	42.1

*Without seasonal adjustment. All other indexes shown have been adjusted seasonally. 1923-1925 = 100.

Motor Products Earnings

DETROIT—Motor Products Corporation reports net profit after charges of $169,027 for the first nine months of 1933 against a deficit of $211,768 in the same period last year. Third quarter earnings were $120,419 as compared with $196,333 in the preceding quarter and a deficit of $87,735 in the corresponding 1932 quarter.

Roosevelt Statement on Merit Clause Expected to Speed Parts Code Action

President Upholds Right to Select, Retain and Advance on Merit but Says It Must Not Be Used as Subterfuge to Defeat Collective Bargaining Privileges Under the NRA

WASHINGTON, D. C.—Early approval of the code of fair competition for the automotive parts and equipment industry, is being predicted here following the President's letter to General Johnson in which he discussed the controversial "merit" clause and the rights it is intended to protect.

While representatives of the parts industry have not commented officially on the effect of the President's letter on their stand for the inclusion of the disputed clause, it is understood that they are disposed to regard Mr. Roosevelt's interpretation as a satisfactory alternative. Inasmuch as agreement on all other points in the code, including the 40-hr. maximum week, is reported to have been reached, the last bar to early approval of the code is believed to have been removed.

The President's letter and General Johnson's comments thereon follow:

"Dear General Johnson:

Following our recent discussion of various misunderstandings and misinterpretations of Section 7 (a) of the National Industrial Recovery Act, I wish to advise you of my position.

Because it is evident that the insertion of any interpretation of Section 7 (a) in a code of fair competition leads only to further controversy and confusion, no such interpretation should be incorporated in any code. While there is nothing in the provisions of Section 7 (a) to interfere with the bona fide exercise of the right of an employer to select, retain or advance employees on the basis of individual merit, Section 7 (a) does clearly prohibit the pretended exercise of this right by an employer simply as a device for compelling employees to refrain from exercising the rights of self-organization, designation of representatives and collective bargaining, which are guaranteed to all employees in said Section 7 (a).

Very truly yours,

FRANKLIN D. ROOSEVELT."

In a statement supporting the President's views, General Johnson said:

"Our four months' experience has also demonstrated the necessity for a clarifying statement on the controversy over Section 7 (a) of the Recovery Act. There is nothing obscure about that section itself. The obscurity arises out of unauthorized interpretations by some employers and some employees in an effort to read into that section something more or less than is written there.

"The President has made that interpretation in a single sentence, so phrased that it is believed that nobody can separate it from its setting or otherwise cut it up to make it seem to say something different from what the words intend. Both industrial and labor leaders say that this will do much to quiet current disputes on this point."

Reo to Get Self Shifter Patent

LANSING—Reo reports that it has received notice that a patent will be granted on the company's self-shifter transmission. The unit was planned by H. T. Thomas, chief engineer, and designed with the assistance of John Bethune and Albert B. Hayes of the Reo engineering staff.

Car Makers Meet Jobbers on Wholesale Code

WASHINGTON, D. C.—Wholesale distribution of automotive merchandise, no matter by whom performed, will be subject to the automotive wholesale code, it is being predicted here. The significance of this lies in the fact that the wholesaling of parts and equipment, when performed by car manufacturers or their distributors, will come under the jobber code.

Following the public hearing on the code on October 21, representatives of the parts departments of leading car makers arrived here early this week and immediately went into conference with representatives of the jobbing trade in an effort to effect revisions in the code that would be satisfactory to all concerned. So far as could be determined, no conclusions have been reached to date, except the general opinion that the code will cover all automotive wholesaling outside of complete vehicles.

No "Cracking Down" Yet

PHILADELPHIA—New car registration returns from 38 states for September confirm earlier evidence that the public did not "crack down" on Ford because of his failure to qualify for the "Blue Eagle." The returns from these states are analyzed in the following table:

Percentage of Total New Car Registrations (38 States)

	July	August	September
Ford	20.7	21.9	21.2
Plymouth ..	17.2	18 0	19.0
Chevrolet ..	31.7	30.8	30.7

Harris With Brandt-Warner

YORK, Pa.—Sid G. Harris, who has been sales engineer and eastern representative for Continental Motors Corp. during the past five years, is now employed in a similar capacity by the Brandt-Warner Mfg. Co., York, Pa., manufacturers of axle shafts. His headquarters will be at 33 West 60th St., New York City.

CALENDAR OF COMING EVENTS

SHOWS

Automotive Service Industries Show, M.E.M.A., N.S.P.A., M.E.W.A., Chicago .....Oct. 30-Nov 4
English Truck Show, Olympia...Nov. 2-11
English Motorcycle & Cycle Show, Olympia .....Nov. 25-Dec. 2
New York, Automobile Show....Jan. 6-13
Los Angeles, Automobile Show..Jan. 6-14
Toronto, Ont., Automobile Show, Jan. 13-20
Milwaukee, Wis., Automobile Show, Jan. 13-20
Newark, N. J., Automobile Show, Jan. 13-20
Cleveland, Ohio, Automobile Show, Jan. 13-20
Cincinnati, Ohio, Automobile Show, Jan. 14-20
Philadelphia, Pa., Automobile Show, Jan. 15-20
Detroit, Mich., Automobile Show, Jan. 20-27
Hartford, Conn., Automobile Show, Jan. 20-27
Baltimore, Md., Automobile Show, Jan. 20-27
Chicago Automobile Show, Jan. 27-Feb. 3
Rapid City, S. D., Automobile Show Feb. 7-10
Springfield, Ill., Automobile Show, Feb. 8-10
Black Hills, S. D., Automobile Show Feb. 15-17
Evansville, Ind., Automobile Show, Feb. 20-24
Denver, Colo., Automobile Show, Feb. 20-28

CONVENTIONS

Natl. Stand. Parts Assoc., Chicago, Oct. 27-28
Motor & Equipment Wholesalers Association, Chicago .....Oct. 27-28
Motor & Equipment Manufacturers Association, Chicago .....Oct. 31
International Power & Engineering Conference, New York City...Dec. 3-8

MEETINGS

American Petroleum Institute, Annual, Chicago .....Oct. 24-26
Natl. Automotive Parts Assn., Annual Meeting, Chicago ....Nov. 2-3
Commercial Motor and Transport Vehicle Exhibition, London, England .....Nov. 2-11
Natl. Automobile Dealers Assoc. Meeting, New York City .....Jan. 8
Rubber Assoc. Meeting and Banquet, New York.....Jan. 8
S.A.E. Annual Dinner, New York...Jan. 8
Motorcycle & Allied Trades Assoc. Annual Meeting, New York...Jan. 10
S.A.E. Annual Meeting, Detroit Jan. 22-25